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OBSERVATION AND EXPERIMENT AND THEIR USE IN THE MEDICAL SCIENCES.

BY

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THE METHODS OF SCIENCE IN GENERAL.

THE accumulation of verifiable knowledge, which is the object of science, depends fundamentally on the discovery of invariable sequences of events in the complex and apparently random phenomena of our experience. The obvious method of doing this is that of observation. We study the natural succession of events as they pass before us and observe those resemblances and recurrences which betray an underlying relation. The power of the method has been increased by refinement and elaboration until it can scarcely be recognized in this simple statement of it. Instruments such as the telescope, the microscope, the spectroscope, have increased its range and its precision; completeness and exactitude of record have increased its trustworthiness; and mathematics has given it the power of detecting relations among recorded facts too complex or too obscure to be within range of direct contemplation. But refinement of method, however far it may be carried, can never surmount the limitation by which observation in its very nature is restricted. This limitation is the circumstance that the observer must wait upon the natural occurrence of the phenomena he wishes to study. The phenomena may be too infrequent for their significant recurrence to come within the span of human life, they may be too complex, and too closely mixed with irrelevant events for the invariable sequences they possess to be detected.

Science has found a means of escape from the limitations of the method of observation in the method of experiment. Partial as the solution of the problem must be admitted to be it has proved of the highest value—of such value, indeed, that its own limitations tend sometimes to be a little overlooked. It will therefore perhaps be useful to examine more closely the relations of the two methods.

The method of experiment seeks to free the man of science from the arbitrary natural distribution of the phenomena he wishes to study. It seeks to give him the required phenomena at command and unmixed with irrelevant events which may modify the essential facts and confuse the study of them. Experiment, then, isolates the event to be studied from the common order of nature, and causes it to occur in circumstances as far as possible simplified and subject to specification.

Applicability of Experiment.

Certain sciences have not merely benefited by experiment, but have been created by it. This is true of physics and of chemistry, and is so nearly true of physiology as scarcely to need discussion. In all these sciences experience has proved that the laboratory "event" is as good as the natural "event," and that the simplification needed for experimental precision is not necessarily accompanied by distortion of the phenomena concerned. On the whole perhaps it is surprising that physiology has been able successfully to isolate for study so many of the phenomena of living organisms, but of the fact there can be no doubt.

Regarded as subjects for experiment certain sciences stand at the opposite extreme to the position occupied by chemistry and physics. Such are astronomy, geology, meteorology. In the material of their sciences the scale of time and space and the forces concerned are so large that it is usually impossible to produce in the laboratory conditions approaching those of the natural event. These sciences therefore must be, and apparently must continue to be, primarily observational. This is, however, by no means to deny that they can and do have useful relations with experimental methods, though these relations may be less direct than in other sciences. In geology we may, for example, study in the laboratory some of the elements in the process of metamorphism, though we can command no more than an almost negligible fraction of the time and the force that have gone to the formation of metamorphic rocks in nature. In meteorology, again, we may study the differences of electric potential that are produced by the breaking up of falling water drops, but we must remain almost infinitely far from the scale and magnitude of a natural thunderstorm. In astronomy, a science of whose debt to experimental work there can also be no question, the impossibility of reproducing in the laboratory the conditions of the natural event is still more apparent.

Thus in geology, meteorology, and astronomy experiment occupies the position of the small scale model and is therefore subject in its degree to the defects of the argument from analogy. These sciences must in fact be described as sciences of observation and *collateral* experiment, and have very plain methodical differences from the sciences of *direct* experiment such as physics and chemistry.

Experiment in the Biological Sciences.

Physiology has been included here among the sciences of direct experiment, and there can be no doubt of the thoroughness and success with which it has established itself there. It has been hinted, however, that the case of physiology is to some extent different from that of the other sciences of direct experiment, and its brilliant evolution has had to overcome difficulties special to it. The living organism has a certain, perhaps indefinable, but not the less substantial unity, and it is this unit and not its constituent parts or processes that has been the material acted on by evolutionary forces. A physiological process may therefore be expected to lose something of its full natural character when it is isolated from the complete animal for purposes of experimental study. This consideration does in fact express one of the limitations of experimental physiology, and one that is apt to become increasingly manifest in the most advanced branches of the subject. On the whole, however, it is highly remarkable with what success the physiologist has been able to defy this limitation and to detach bodily processes into circumstances of such simplification, or such complete specification, as to make study fruitful without unduly distorting their natural character. Such classical simplifications as the nerve muscle preparation, the isolated heart, the spinal animal, have been justified beyond all question by the substantial additions to knowledge that have been made through them. These preparations cannot, however, fail to remind us sharply of the difference in the status of experiment in physiology and in physics and chemistry. The essence of a scientific experiment is the specification of its conditions. Now the normal medium of any bodily organ or process is the intact living animal, and its normal activity is closely compounded with that of the whole organism. In drawing conclusions from the behaviour of a physiological preparation it is necessary, therefore, to specify how far it has been modified by being isolated. The difficulty of doing this with fullness and precision is not inconsiderable—even the necessity for it is not always closely attended to—and does undoubtedly counterbalance to some extent the advantages of simplification that the experimental method possesses. When this lack of specification is least surmountable we can see in physiology a tendency to become a science of collateral rather than of direct experiment.

Scientific Method in Human Biology.

The distribution of method in the sciences not concerned with the life of man is relatively simple, because all the larger deciding factors are entirely beyond human influence or control. With the sciences of human life,* the

* The interrelation of physiology and pathology is so close that from the point of view of method they may be usefully regarded as continuous and inseparable. The apparent necessity for the medical student to complete his knowledge of the normal before beginning his study of the abnormal is probably as fallacious as it is practically wasteful and inconvenient.

situation is complicated by the prejudice and the ethical limitations to which direct experiment in man is subject. The effect of these circumstances has been to make the study of the processes of the human body in health and disease dependent chiefly on observation in man combined with experiment in animals. Experiment in animals has had great success in solving the problems of human biology, and has provided one of the most complete proofs of the value of experimental science and of the general similarity of the fundamental vital processes in all animals. At the same time, however, it must be recognized that these experiments have in the strict sense and in relation to man collateral rather than direct validity.

THE APPLICATION OF ANIMAL EXPERIMENT TO MAN.

The success of animal experiment in human physiology and pathology has been so great and continuous that there has never been any serious call for its collateral quality to be dwelt upon. With the increase of knowledge, however, and the need for a finer and finer penetration into the processes of health and disease, the usefulness of a closer critical examination of the actual state of affairs will probably become manifest. To those whose work in human biology lies in the observational study of man rather than in animal experimentation the value of such an examination tends constantly to present itself. The gap between man and any other animal is large even when judged on the crude basis of manifest structure. When the relation of man to animals is regarded from the functional point of view the gap is seen to be larger and much more significant. It may be useful to specify some of the biological anomalies in the situation of man which cannot be safely ignored in applying experimental results obtained in animals.

The Upright Posture.—The simplest case in which the conditions common to most other animals have been drastically rearranged in man is the upright posture. The essential mechanics of the skeleton and of the circulation were established, and as it were tried out, in quadrupedal forms through an enormously long space of time. Upon this well-proved arrangement, and it would seem rather suddenly and without a fundamental mechanical reorganization, was imposed a posture which threw on the old scheme fresh strains that have tried it to within reach of the actual margin of safety. The results of this late and so to say hurried revision of the structural plan show themselves far and wide in the pathological field. It is not unreasonable to see these strains as important factors in the so-called static deformities, and in the excessive liability of the lower limbs to diseases of the bones and joints and to circulatory disorders on both the arterial and venous sides. Echoes of the same disturbing element are perhaps to be found in abdominal pathology, and even in the peculiarities of the cerebral circulation. In general, however, it is perhaps in relation to the special qualities of the circulation as a whole in man that the upright posture should arouse the most caution in applying the results of animal experiment.

Longevity.—The fact that in man survival to an age long past that of reproduction is a common event makes his general biological position in some ways unique. Morbid states that show themselves on the whole only when reproductive activity is normally waning or at an end can have no selective elimination acting against them; they can thus flourish untouched by what is probably the strongest of all checks upon diseases that normally have their range in or before the active period of sexual life. It seems reasonable to suppose that an essential factor in the inveteracy of cancer and its excessive frequency in man is its existence in what we may call a biological backwater, where it has no effects of selection to contend with. The difference in frequency of sarcoma and carcinoma might perhaps plausibly be accounted for in the same way. In applying the results of animal experiment to pathological conditions in man it seems likely that this peculiar feature in the situation of the latter may be a cause of difficulty, and perhaps of wrong conclusions.

The Effects of Unrestricted Food Supply.—It is well recognized that normally, and in a general way, the inclination for food is directly related to emptiness of the stomach rather than to the nutritional needs of the animal concerned. The usefulness of this arrangement is obvious: if the impulse to seek food were felt only when the body was in need of it to carry on its functions, there would be a risk that the animal would already have lost the energy necessary for the search. The normal animal eats, then, because the stomach is calling for food, not because the body is calling for nourishment, and the physiological situation is satisfactory as long as the food is of low nutritive value, as in the herbivora, or has to be worked hard for, as with the carnivora. Civilized man has broken through the natural safeguards of the process by obtaining a food supply unlimited both in nutritive value and in amount, but he still regulates his eating by the demands of his stomach rather than by the needs of his body. The result is that by the time middle-age is reached the absence of some degree of adiposity is statistically abnormal, and may well give rise to a suspicion of disease. Here again we find a gross functional discrepancy between man and animals which may well have a confusing effect in the application of experimental results.

The Effects of Personality.—The living animal is a functional unit dependent on the close correlation and harmonious working of its parts. There is no reason to suppose that there is any less essential need for harmony among its mental activities and between them and its bodily activities than there is for harmony in the bodily sphere itself. In animals other than man disharmonies within the mind or between mind and body, though they sometimes give hints of their presence, are generally inconspicuous. The relatively enormous development of mental activities in man has enlarged correspondingly the region in which a lack of harmonious working may arise. Disharmonious mental states, such as those due to the clash of individual and social needs, are notoriously apt to *interfere* with bodily function to a degree and with a duration and constancy that may simulate organic disease and perhaps initiate it. It is a fact unfortunately beyond contest that, though the interaction of mind and body presents problems to the importance of which lip-service has been abundantly paid, these problems have never received thorough realistic and scientific treatment. The explanation of this deficiency may be in the consideration with which we are here specially concerned, that this is a region in which the functional gap between man and other animals is at its widest and most profound.

THE FUNCTION OF OBSERVATION IN HUMAN BIOLOGY.

We have pointed to some of the corrections which may have to be applied to animal experiment before its significance for man can be established. There is, however, another limitation of the range of collateral experiment in human biology. This is in regard to investigations in which access to the subjective side of experience is indispensable. The relation between cerebral states and states of consciousness in the normal and abnormal, and the physiology and pathology of pain, present problems of this class. All these considerations taken together, while they can, of course, in no way depreciate the inestimable gifts human biology has got, and will probably continue to get, from collateral experiment, yet do suggest that for the finest and deepest insight into the most characteristic phenomena of man's life it will be necessary to use, with all its inherent restrictions, the method of direct experiment in man himself.

Our knowledge of normal physiology in man, such as it is, is almost wholly due to the experimental method. In the study of disease, on the other hand, while the experimental method has been very valuable, and promises to be increasingly so, it is to be noted that the method of observation has behind it a long and honourable history; but it cannot be denied that for a considerable time essential progress in our knowledge of disease has come less and less from the time-honoured method of observation and more and more from experiment. Moreover, with all its opportunities, observation has at its best been able to disclose but little of the fundamental processes of disease, of the exact meaning of morbid phenomena, or of the precise mechanism lying behind symptoms; whereas experiment has a remarkable series of successes of these very kinds already to its credit. In view of such considerations as these it may well be asked

whether the time has not come when it should be recognized, with all the practical consequences that would follow, that observation can no longer be regarded as able to effect serious advances in medicine.

The method of experiment studies phenomena under the simplified and specified conditions of the laboratory; the method of observation studies phenomena as they are presented in the random order of natural events. The first tends to yield clear results capable of analysis by further experimentation; the second tends to yield broader, vaguer conclusions, and its power of penetration by analysis is usually limited. The first requires patience, caution, ingenuity; the second, insight, great familiarity with its material, and what we may call the intuition of reality—that is to say, the power to choose among equally plausible hypotheses the one that best fits the general behaviour of the material in question. In a very broad way it may be said that successful observation depends more directly on a special mental aptitude than does successful experiment.

The chief limitation in practice on the value of even the *best* kind of observation is the difficulty in proving its conclusions and therefore of making them available to the general body of science. We have said that successful observation is dependent on special aptitude, and it is notorious that ten experiences will yield a great deal more to one man than a hundred of the same kind to another. This, of course, means that there must usually be a large intuitional element in the conclusions of the able observer, who is apt to be impatient of the drudgery of scientific proof, correspondingly careless in attempting it, and therefore little apt to advance substantially the scientific structure of his subject. The evolution of medicine, which has been so largely dependent on it, illustrates in a peculiarly pointed way the disadvantages to which purely observational inquiry is subject. The method failed to penetrate the nature of infective processes on the one hand, and on the other it ascribed, and indeed still ascribes, a wholly undue importance to insignificant climatic conditions as direct causes of disease. It has held the key to the pathology of vitamin deficiency, to endocrine disorders, to the relation of malaria and mosquito, but has lacked the power decisively to enter into and exploit these new provinces. It has had for the most part to leave unelucidated the events that connect the processes of disease with the symptoms they produce, so that even to-day, for example, pain, which is by far the commonest of all symptoms, is the bugbear of diagnosis and treatment.

The essential feature of the observational method is the recognition of groups of events of which the items are significantly related to one another. The simplest case in the detection of such significant relations is when the suspected series recur in the same order often enough to be easily noticeable. The study of disturbed function in the human body when it has passed beyond its most elementary stages does not, however, provide many sequences that by their invariable recurrence and unmistakable identity show that their items are interrelated. The total body of phenomena accompanying disturbance of function is very large and very variable, so that the significant series which is being looked for may present itself in a different disguise of detail at each reappearance. The simple method of establishing the significance of a group of phenomena by the dry statistical record of its invariable recurrence in given circumstances is thus not widely applicable in medicine, and the method of observation has not usually obtained its more considerable advances in this way. More often the observer has to be content with a limited number of recurrences of the group of phenomena, and relies upon his close familiarity with and "feeling" for his material to confirm the relation he suspects between items of the group. This ability to detect significant relations among apparently unrelated phenomena by a kind of direct examination is the distinguishing gift of the able observer.

Observational inquiry then in such a field, for example, as clinical medicine may give results that are questionable on the one hand because too much value has been given to conclusions essentially based on intuition, and on the other hand because the possibilities of exact observation and record have been exaggerated. We are all familiar with instances of large and imposing masses of records vitiated at their very base by the preconceptions of their compilers or by the impossibility of precise record, and with instances of the hieratic pronouncement that rises superior to the need of proof. Neither of these misuses of the method, however, can justify us in ignoring what has been done by it for medicine in the past or in concluding that the period of its usefulness is at an end.

Before inquiring what function the method of observation may yet be able to serve it is well to bring to mind how little the medical sciences can afford to dispense with any means of inquiry that is not demonstrably and wholly sterile. The success of the experimental method has been so great that it has become almost a fixed convention for any general comment on the course of science to deal almost wholly with the triumphs that have been attained by this method and but little with the tasks that have proved too hard for it. This not unamiable weakness is perhaps partly to be explained and excused, at any rate as far as this country is concerned, by the constant hostile pressure against animal experiment and the consequent supposed need to justify it in season and out of season. If, however, we free ourselves, as we may well do for a moment in so technical a discussion as this, from propagandist optimism we shall very easily see that in the interests of science itself we should spare some attention from the triumphs that light up the past, for the needs that darken the future. The progress of science, when regarded with a due realism, is seen always to have been sporadic, to have been subject to lapses of inspiration, to have gone forward in one part of the field at the apparent expense of slackening effort in another. No better illustration of this irregularity in the line of progress could be found than in the fact that after over half a century of experimental pathology the four great scourges of man in temperate climates—influenza, the common cold, cancer, and rheumatism—remain pathological problems so largely unsolved. In the face of a fact like this it is plain that medicine cannot afford to leave unused any implement, however imperfect—especially, perhaps, one to which a definite function otherwise unfulfilled can be assigned.

In trying to define the field in which observation seems to have its characteristic use it is of advantage to get a clear idea of what actually are the chief defects and limitations inherent in the method. Two of these are of such predominant importance that they need only be mentioned: first, the limitation of the extent to which observation can be used in following a problem through stage after stage of elucidation until a fundamental solution is found; and secondly, the readiness with which the method lends itself to faulty or even wholly fallacious conclusions. It may be thought that neither of these defects needs discussion, but perhaps the second has implications which are not always fully realized and which may repay some examination.

Observation and the "post hoc" Fallacy.

The characteristic defect of the observational method as commonly used in medicine is its liability to the *post hoc, propter hoc* fallacy. The only means we possess of establishing a causal relation between events is to observe their invariable occurrence in association. The clinical observer cannot bring about at will the recurrence of events he wishes to study or strip them of irrelevant circumstances as can the experimenter. Moreover, his observations are necessarily made under the pressure of the fact that the events he looks for are not primarily material for science but primarily somebody's symptoms and the signals of somebody's need for help. This urgency in the very air of all clinical work does undoubtedly tend towards the finding of significant relations in sequences of events which longer and more thorough observation would have shown to be unrelated. The well-equipped clinician must possess the qualities of the artist, the man of science, and the humanist, but he must exercise them only in so far as they subserve the getting well of the individual patient. It is a hard doctrine but none the less true that this essential function of the doctor—the care of the given patient—may involve the forgoing of exactly scientific diagnosis, of the artistic perfecting of an operation, or even of the interests of society at large.

It is therefore obvious that the influences against the making of scientific observations by those in the actual practice of medicine are very strong; and it is not surprising that the experimenter is apt to find the clinician on the one hand prolific of unsound conclusions and on the other timid and sceptical in applying the results attained in the laboratory by experiment. No better illustration could be found of the characteristic weakness of clinical methods than the extent to which the ascription of disease to trivial climatic discomforts is still accepted or at least tolerated. Colds and phenomena of the order of draughts and wet feet—alleged causes of colds—are sufficiently common to afford ample opportunities for the discovery of insignificant sequences. This fact, together with the psychological influences tending to associate healthy with comfortable conditions, has produced a veritable folklore pathology of colds and chills which true scientific observation would speedily explode, and which presents clinical medicine in one of its least edifying aspects. There are, however, probably even deeper roots of the inveteracy of the *post hoc* fallacy in medicine. If two events A and B occur repeatedly in the same order, experience teaches us to regard them as having the relation of cause and effect—that is to say, of being so related that whenever A appears it will be followed by B, and wherever B is observed it will be found to have been preceded by A. To establish this relation with any great degree of probability the observed recurrences of A and B in that order must be numerous, must be without exception, and the identity of A and B in each observation must be clear. In clinical observation these requirements cannot usually be satisfied with unambiguous severity; the able observer, therefore, while constantly trying to satisfy them as far as the case permits, will depend more or less on the insight and sense of reality that his familiarity with his material and his natural aptitude have given him.

It is notorious that a conviction of the existence of a causal relationship between two events—a very different thing from the objective proof of such a relationship—is far from being dependent on such deliberate and cautious precedures. In everyday affairs, and to a certain extent in the general run of clinical work, the number of accepted causal relationships far exceeds the number of demonstrated and even of probable cases. It seems likely, then, that there is some strong natural tendency which inclines us to ascribe causal relations to events accidentally and arbitrarily occurring near one another. That we have such a tendency is at least suggested by the work of Pavlov on conditioned reflexes. The essential facts of this work are familiar and need not be recalled in detail. In a dog, in which a salivary fistula has been established so that the flow of saliva can be measured, the presentation of food is followed at once by a profuse secretion. Some arbitrarily chosen stimulus such as the sounding of a metronome is now made to precede immediately the offer of food. After this sequence has been repeated a few times it is found that the auditory stimulus causes a similar salivary flow without any presentation of food. The cerebral cortex has been taught by a very short experience to accept the metronome sound as a precursor of food. In mental terms the sound has become a "cause" of food, and an intelligent dog might classify metronomes in the group of things to be hunted like rats and rabbits. The facts especially to be noted for our purpose here are, first, the readiness with which the link of apparent causation has been formed, secondly, the arbitrariness of the sequence, metronomes having no relation with food in the general objective world, and thirdly, the fact that the relation can be fixed only by adding it to a relation already established—namely, a natural reflex—in this case the visual-salivary reflex.

Enough has been said earlier in this paper to enjoin caution in applying the results of experiments in animals to man. Caution must, moreover, be especially stringent in seeking light on mental problems from cerebral phenomena. Nevertheless, it is clear enough that there is a remarkably close analogy between the aptitude for the formation of conditioned reflexes on the one hand and on the other hand the tendency too readily to ascribe the causal relation to small and unrelated sequences of events; and we may at least suspect that the subjective sense of causation we so easily derive from a few random coincidences is connected with the proved capacity of the brain to pick up arbitrary and as it were "irrational" reflexes. The conditioned reflex then is perhaps the simplest case of the *post hoc* fallacy. When we thus see reason to suspect that our tendency to impute causal relations unjustifiably may be the expression of a characteristic cerebral function we need not be surprised that this fallacy is so common and so difficult to avoid.

We are now in a position to review shortly the disadvantages of the observational method in the study of medical problems as we see it in actual use. These disadvantages fall into three groups.

1. The method as an instrument of inquiry is of limited range. In the systematic attack on a given problem carried on stage by stage until a solution is reached it is notably weak compared with the experimental method to which, in this function, it must always and of necessity remain grossly inferior.

2. The method is known as a matter of experience to be especially open to the *post hoc* fallacy. Though this may not be fundamental and essential as is the limitation noted above we have seen that there may be an organic predisposition underlying it.

3. In clinical medicine the difficulties of securing objective proof by exact observation of identically recurrent events are very great. This tends to make the observer rely on intuition rather than on established conclusions and to make him impatient of the labour of proving or disproving the truth of opinions arrived at by intuition. The result is that the current clinical medicine of any given period is apt to be loaded with "authoritative" opinions often contradictory of one another, many of which are actually capable of, but have never been submitted to, definite proof or disproof.

Limitations of the Experimental Method.

Experiment is observation made in specifiable and controllable circumstances and it seeks to eliminate that dependence on the personal judgement, the tact, the intuition of the observer which is the weakness of the observational method. If we imagine a problem to be attacked and solved independently by experiment and by observation, the solution by the latter method, in addition to having taken longer and being less exact, will generally have demanded a more arduous and intricate intellectual exercise than the solution by the former.

This economy of experiment in its demands upon certain of the less definable aptitudes of the mind is no doubt a contributory cause of its great success as a method, but probably it has secondary consequences which in the long run and on the large scale are not wholly advantageous. A science which is strictly limited to the experimental method is apt to favour in its workers a tendency to deprecate any great speculative activity and to regard an interest in the free play of ideas for their own sake as evidence of a lack of scientific stability and trustworthiness. Such a distrust of the intellect involves an unsound view of the function of ideas in science. It is a mistake to suppose, as it is so easy to do, that science enjoins upon us the view that any given idea is true or false and there is an end of it; an idea may be neither demonstrably true nor false and yet be useful, interesting, and good exercise. Again, it is poverty rather than fertility of ideas that causes them to be used as a substitute for experiment, to be fought for with prejudice or decried with passion. When ideas are freely current they keep science fresh and living and are in no danger of ceasing to be the nimble and trusty servants of truth. We may perhaps allow ourselves to say that the body of science gets from the steady work of experiment and observation its proteins, its carbohydrates, and—sometimes too profusely—its fats, but that without its due modicum of the vitamin of ideas the whole organism is apt to become stunted and deformed, and above all to lose its resistance to the infection of orthodoxy.

The state of inorganic chemistry in the early nineties of the last century showed some traces of the conditions

which too exclusive a reverence for experiment is apt to bring about. The inspiration of the atomic idea was manifestly dying, yet any whisper that the atom might not be the ultimate unit of reality was apt to be snubbed as speculative and unscientific. Nevertheless this impeccable science could tolerate for many years a discrepancy of the order of 1 per cent. in the results of the different methods of preparing nitrogen, and with all its faith in experiment could ascribe the discrepancy to experimental error. And all the while, behind the meagre veil of this experimental error the inert gases of the air were impatiently awaiting discovery. The agitated scepticism with which the discovery of argon was received, no less than the great growth of which that discovery was the germ, illustrated how much chemistry had for the moment lost the aptitude for new ideas and the elasticity of mind which their currency produces. Physiology, though in a less extreme degree, has illustrated from time to time the periodical languor to which a purely experimental science is subject in the absence of the stimulation of ideas from without. Fortunately, its inevitably close, though perhaps not very highly prized, relation to medicine has repeatedly given it the stimulus necessary for renewed vitality, as, for example, in the case of the idea of cerebral localization and the idea of internal secretion. With such illustrations in mind it may perhaps be admitted that experimental science does not of itself and of necessity produce the most useful attitude towards ideas.

It is sometimes taken as a matter of course that scepticism is the very highest flower of the scientific spirit. The thesis might be admitted to have an aspect of truth if it did not so often cover a mere automatic means of protecting ourselves against the painful irruption of new ideas. If the reader of this paper will ask himself what has been his attitude towards anything in it that may have been new to him, he will probably find that his reaction has been far less to explore what possibilities the unfamiliar idea may have happened to possess, than almost automatically and at first sight to look for arguments against it. And if he were challenged to give the reasons for his matter of course use of this method he would no doubt defend it as essentially scientific.

Even if it is admitted that opposition towards ideas is an attitude of mind not best calculated to extract what value they may contain, we are apt to be told that the true scientific position is that of the famous "suspense of judgement." It cannot, however, be conceded that even this time-honoured phrase represents an attitude quite free of the defensive taint. The truly scientific mind is altogether unafraid of the new, and while having no mercy for ideas which have served their turn or shown their uselessness, it will not grudge to any unfamiliar conception its moment of full and friendly attention, hoping to expand rather than to minimize what small core of usefulness it may happen to contain. It is this capacity in scientific workers for what we may call provisional acceptance that encourages in science the steady flow of ideas and tends to preserve it from those periods of intellectual languor to which, as we have seen, the purely experimental sciences seem in some degree to be prone.

We have shown that observational study is subject to certain defects, especially in its liability to fallacy and its limitations as an exact instrument. But when it is successfully practised it renders necessary the special cultivation of certain qualities of mind—intuition, imagination, the feeling for reality—which are just those which may be expected to provide that flow of ideas that keep the study of a science animated and interesting. It would seem, therefore, that it must be an advantage to an experimental science to have an observational side, the function of which, in addition to its use as an implement of research, would chiefly be to promote the atmosphere of intellectual liveliness which is so important an evidence of health.

If these considerations are sound they afford good reason to think that our desire to forward the scientific study of medicine and the branches of knowledge on which medicine depends will be best fulfilled not only by promoting the use of experiment wherever possible and by bringing every problem that admits of it to an experimental test, but also by keeping alive the method of observation in medical studies and doing what we can to give it the benefit of scientific principles of use. In order that observation should have its proper value certain principles we have already indicated must be thoroughly familiar. The true nature of the method must be understood, its special liabilities to fallacy must be known, and its weakness of trusting to intuition when actual proof is possible, overcome. There can be little doubt that it is this last-named characteristic of ordinary clinical practice that inclines the critics of the observational method in medicine to view it with so little charity or hope. In clinical work proof is usually difficult to obtain, often tedious and unencouraging to attempt, and not rarely altogether impossible; at the same time any effort towards it is constantly overshadowed by the urgency to act. It is natural, therefore, for the expert clinician to rely on his intuition and judgement even when actual and final proof is possible, though this preference does constitute a reproach to the method from any scientific point of view. If clinical observation is to renew its prestige and to continue its indispensable function of stimulating the experimental attack on medical problems, it can do so by showing resolution in looking for proof wherever proof is possible, and a scientific standard in its scrutiny of evidence.

Conclusion.

In reviewing the principles of method by which the task of the medical sciences is to be carried forward we have seen reason to group the resources available into three classes: first, experiment with animals; secondly, experiment with man; and, thirdly, clinical observation. All of these methods are necessary for sound and continuous progress, but each has its special province, and each has certain limitations which prevent its being wholly independent of the others.

1. *Animal Experiment*, which we have ventured to call collateral experiment, must always be the chief instrument for the solution of fundamental medical problems. It has to be recognized, however, that the functional gap between man and other animals, and especially those commonly available in laboratories, is larger even than the morphological gap. We have pointed out four of the regions in which this discrepancy is largest, and where, therefore, special caution is necessary in applying animal results to man. The need for such caution is, however, fundamental and general, if medicine is to get the fullest benefit from what has been, and still is, its most fruitful resource.

2. *Experiment in man*, or direct experiment, limited in possibilities of application as it necessarily must be, is the one wholly unexceptionable method available for the solution of problems of human health and disease. Though its history is still very short, it has already proved remarkably fruitful. There can be no doubt that one of the chief duties before medicine at present is the exploitation of the method of direct experiment. The natural history of sciences, however, seems to indicate that a diet of pure experimentation in a limited field is not enough for permanent scientific health. If experimental medicine is to progress healthily it must have a full supply of ideas, and must know how to deal with them. Such a purpose can best be served by a close contact with the realities of clinical medicine.

3. *Clinical observation* has given to medicine very long and very honourable service. There is a certain melancholy in recognizing, as we must, that it has never been, except in the hands of an occasional genius, a very effective instrument for penetrating the fundamental secrets of health and disease, and in recognizing that we now possess far more effective instruments for this purpose. To recognize these facts is, however, by no means to acquiesce in the view that clinical observation has no longer important functions to fufil in progressive medicine. In the first place it is still a valuable method of scientific research. At the same time it must be admitted that the method is, in some respects, far less general and far less simple than that of experiment; that it lends itself to the solution of only a limited class of problems, and that it demands, at any rate for its great strokes, a somewhat special aptitude of mind. Moreover, if it is to make itself less

dependent on special aptitude, a wider interest in the need for, and the means of proving its propositions will be necessary. It is possible that the increasing knowledge of experimental methods may bring this about and stimulate a renewed vigour in purely clinical work. In the second place, as successful clinical observation demands a certain special aptitude, and the unresting contemplation of a very large and rich material such as we find at its highest in, for example, a Hughlings Jackson, it should be the source and reservoir of that flow of ideas which alone can maintain the fertility of the whole field of medical science.

To the experimenter immersed in his research, and to the clinician struggling with the load of experience and the needs of his patients, it may seem unpractical to concern ourselves with the theory of medical knowledge. On the other hand, it is perhaps the lack of rational doctrine and a general interest in the problems of method that has made medicine the scene of so much disunited and contradictory effort, and helped to put it down from its historical position as the mother and the nurse of science.

INFECTION BY ANAEROBIC STREPTOCOCCI IN PUERPERAL FEVER.

BY

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THERE are many cases of puerperal fever in which we are unable to make a precise bacteriological diagnosis. Blood cultures give no growth and cultures made from the cervix uteri give a mixed growth of several bacterial types. If haemolytic streptococcal colonies occur in any number it is usual to assume that an infection by that organism is responsible for the patient's fever—and probably that assumption is more often right than wrong. When haemolytic streptococci are absent we are left in doubt as to the nature of the infection, and without a laborious, and possibly unfruitful, examination of the patient's blood for evidence of an antibody response to one or other of the uterine microbes, we can get no further. All these cases—and they constitute a considerable proportion of the total puerperal infections—have to be written down as *infections of uncertain origin*.

HISTORICAL.

The suggestion that anaerobic streptococci may play an important part in puerperal infections is not a new one, although it has received hardly any attention in this country. In 1899 Menge and Krönig recovered these organisms from the peritoneum in cases of suppurative peritonitis, and claimed that they ought to be regarded as definitely pathogenic for man. Krönig (1895) had previously demonstrated that similar streptococci were often present in the vagina of pregnant women. They were first cultivated from the blood in puerperal fever in 1910 by H. Schottmüller, whose papers make an important contribution to our knowledge of the clinical aspects of this disease. He applied the name *Streptococcus putridus* (later *putrificus*) to this organism on account of the fetid gas produced by it in cultures when blood was present. Veillon had (1893), however, previously named it *Micrococcus foetidus*. In Schottmüller's series of 50 cases he obtained a pure culture of *Streptococcus putridus* from the blood in 5, and in one case a mixed culture of *putridus* and *haemolyticus*. In the same series of 50 cases a pure culture of haemolytic streptococci was obtained from only two cases. Uterine cultures showed these two types to be present in an equal number of cases—namely, fifteen.

The further experience of twenty years has served to strengthen Schottmüller's belief that these anaerobic streptococci are at least as important as the haemolytic variety in the causation of puerperal post-partum infections. An analysis of his findings in 231 fatal cases published in 1923 showed that the haemolytic streptococcus was obtained in pure culture from the blood of 42 patients, and *Streptococcus putridus* from 41. In 11 other cases blood culture gave a mixed growth of anaerobic streptococci with other species. Peritonitis occurred in 89 of the patients, haemolytic streptococci being obtained in pure culture from the pus twenty-eight times, *Streptococcus putridus* thirty-one times. *Streptococcus putridus* grew in mixed culture from the pus of 7 other cases. The clinical conditions most frequently associated with infections by *Streptococcus putridus* were subacute and chronic thrombophlebitis affecting the parametrial venous plexuses, and salpingitis. Abscess formation was a common sequel.

Reviewing the whole subject of puerperal infection in 1928 Schottmüller states that the haemolytic streptococci account for scarcely one-third of all his fatal cases. He still recognizes only a single type (*putridus*) of anaerobic streptococci. His view as to the importance of the anaerobic types is not shared by all his German colleagues, but recently Sommer, in an analysis of 261 cases of generalized infection occurring in Berlin (186 of them post abortum and 58 post partum), has brought some support to it. Sommer's observations led him to conclude that staphylococcus is by far the most common cause of the generalized infections following abortion (71 cases out of 186) and that haemolytic streptococci and *Streptococcus putridus* (in that order) are responsible for most of the post-partum septicaemias.

Schwarz and Dieckmann (1927) have also reported an investigation carried out by them in Washington. Combined aerobic and anaerobic blood cultures were made in a series of 68 puerperal fever cases occurring during a period of two years. In 11 cases a pure growth of strictly anaerobic streptococci was obtained, and in 6 cases a growth of "aerobic organisms" (types not specified). Ten patients died, of whom five had a generalized infection by anaerobic streptococci. In 35 cases cultures from the uterus gave a growth of these cocci.

Schwarz and Dieckmann do not suggest that they encountered an epidemic of infection due to these anaerobic streptococci, and their conclusions are in general agreement with those of Schottmüller. They did not attempt the differentiation of the strains isolated from their cases, but (unlike Schottmüller) they did not regard them as a homogeneous group all conforming to the *putridus* type. They call particular attention to one type which was cultivated in nine blood cultures (? from nine different patients)—a small Gram-negative cocco-bacillus which produced black discoloration of blood agar. It is not quite clear whether they included this organism among their anaerobic streptococci.

Two facts, then, stand out from the investigations of the past—namely, (1) that in Germany and in America strictly anaerobic streptococci have been isolated from the blood of a number of cases of puerperal fever, particularly those of the thrombo-phlebitic type; and (2) that similar organisms are frequently present (estimates vary between 5 and 20 per cent.) in the vagina during pregnancy (Krönig, Natwig, and others).

Beyond these facts we have learned very little. The description of strains by Veillon (1893), Krönig (1895), Natwig (1905), Schottmüller, Lewkowicz (1901), Sternberg (1900), Graf and Witneben (1907), and particularly the laborious investigation of Prévot (1924), seem to show that there is a large group of these anaerobic streptococci, and that their final differentiation is likely to prove a matter of considerable difficulty. Prévot has suggested a preliminary differentiation into three main classes: (*a*) those which produce fetid and other gases in culture; (*b*) those which do not—mostly very small cocci; (*c*) those which are only "anaerobes of predilection"—that is, they can be educated, more or less, to aerobic growth. This differentiation Prévot found to be justified by serological tests. A few of the strains examined by him were pathogenic for laboratory animals and a few produced a feeble exotoxin. No specific treatment of the infections by these organisms has yet been forthcoming.

AUTHOR'S OWN EXPERIENCE.

During the years 1923–28 I made bacteriological investigations of a large number of cases (about 240) of severe, and moderately severe, puerperal fever. From 55 to 65

per cent. of them *Streptococcus pyogenes* was cultivated, either from the blood or the uterus, or, in many of the fatal cases, from both. Anaerobic streptococci were not isolated from the blood of any case, and the presence of these microbes in cultures made from the uterine discharge was not specially noted.

During the same period cases were met with from time to time which puzzled me very much. In spite of frequent rigors and high fever blood cultures were always negative, and cultures from the cervix uteri (usually only aerobic) gave a scanty mixed growth. (Schottmüller's work was not familiar to me at this time.) When these cases came to necropsy cultures from the spleen were usually sterile.

In the autumn of 1928 a patient of this type came under my notice at Queen Charlotte's Hospital. During several weeks of irregular fever, with almost daily rigors, I failed to cultivate anything from the blood, but finally, by more strictly anaerobic technique, succeeded on two occasions in isolating a gas-forming streptococcus, which refused to grow aerobically after repeated subculture. The patient ultimately developed a large abscess containing very foul pus from which this streptococcus was cultivated, together with diphtheroid bacilli (facultative anaerobes).

Having learned something of the characters and cultural requirements of this anaerobic streptococcus from my experience of this case I determined to investigate future cases of puerperal fever more carefully, with a view to detecting these infections if they should occur. Anaerobic plate cultures (blood agar) were therefore made from the cervix uteri of every case, and my routine procedure for blood cultures was modified in such a way (vide infra) as to favour the growth of strictly anaerobic as well as aerobic organisms.

It is not proposed to report at any length in this paper upon the cultures made from the uterus. Many of them have given an almost pure growth of haemolytic streptococci on both the aerobic and anaerobic plates. Many others have given no growth, or only a very sparse growth of diphtheroid bacilli, on the aerobic plate, but a profuse growth of indifferent streptococci—sometimes of more than one type—on the anaerobic plate. How many of the latter were strict anaerobes, or only "anaerobes of predilection," has not been determined; nor is it known how many of them are to be regarded as saprophytes multiplying in the blood clot, etc., of the placental site, and how many represent a true infection of the uterine tissues. Until there is more information on these matters little is gained by making a careful census of the cases yielding an abundant culture of haemolytic streptococci and of anaerobic types respectively. For the present it may suffice to state that both classes are frequently met with in puerperal fever.

The evidence furnished by blood cultures, on the other hand, is generally accepted as indicating true infection, even if the microbes—as is often the case—are simply thrown off into the circulation from a local focus of sepsis.

In the accompanying table I have summarized the combined aerobic and anaerobic blood cultures made on 76 cases of puerperal fever between October, 1928, and June 1st, 1930. The great majority of these cases were post-partum infections.

Blood Culture Results in 76 Puerperal Fever Cases.

	Number of cases positive.	Positive on more than one occasion.	Deaths.
Pure culture of S. pyogenes (haemolyticus)	12*	4	6*
Pure culture of anaerobic streptococci ...	9	4	3
Mixed culture—two types of anaerobic streptococci or anaerobic streptococci with other organisms...	8	6	4
Pure culture of staphylococcus	1	1	1
Pure culture of B. coli	3	0	2
Pure culture of B. proteus	1		1

There was a negative result in 44 cases.

* Includes one case in which the blood culture was actually negative, but in which the post-mortem examination showed that invasion of the blood stream had probably taken place during life.

It will be seen that anaerobic streptococci were recovered from the blood in no fewer than 17 cases, either in pure or in mixed culture.* The high proportion of mixed cultures is remarkable. Anaerobic streptococci were also grown in pure culture from the pleural effusion of one more patient whose blood, examined rather late in the disease, proved sterile. In no case did the blood culture give a mixed growth of haemolytic and anaerobic streptococci. Two patients whose blood gave a pure growth of anaerobic streptococci gave a few colonies of haemolytic streptococci along with anaerobic types, in cultures from the cervix uteri.

Some Particulars of the 17 Cases of Generalized Infection due to Anaerobic Streptococci.

Etiological.—Thirteen of the cases occurred at Queen Charlotte's Hospital (12 of them between March, 1929, and June, 1930) and 4 were met with in other London hospitals. There has been nothing to suggest epidemic infection among the Queen Charlotte's Hospital series of cases. In 10 of the 13 cases occurring there some intra-uterine manipulation had been carried out—for example, in 6 cases manual removal of the placenta, in 3 cases manual rotation or the replacement of a prolapsed arm, and in one case plugging of the uterus on account of placenta praevia.

Clinical Features.—In no case was the infection fulminating. In the most rapidly fatal case the patient died in eleven days with broncho-pneumonia; the average course, whether to death or convalescence, was six to seven weeks, and one patient is still in hospital after twenty-seven weeks' illness. The clinical manifestations varied considerably, but on a broad view they might be summarized as follows: the patients are much less ill and the fever less severe and less sustained than is the case in generalized infections by haemolytic streptococci; rigors are of frequent occurrence, but the general condition is good, and the pulse rate often low, in the intervals; there is usually no pain, and little can be made out by physical examination, except perhaps a slight tenderness on deep palpation over the brim of the pelvis—a sign which can often be related at necropsy to a septic thrombus in the ovarian veins. Anaemia is a striking and progressive feature in the prolonged cases; diarrhoea is not common except when suppuration has occurred in the retroperitoneal tissues of the floor of the pelvis. In 9 of the cases pus has formed in this or some other situation. One developed general peritonitis, probably as the direct result of the bursting of an abscess. She recovered after drainage of the peritoneum. Cultures from the peritoneal pus and from the patient's blood a few hours before the laparotomy gave mixed growths of anaerobic streptococci (apparently identical types) and of an unidentified slender Gram-negative bacillus (facultative anaerobe). It may be noted that 5 of the 9 cases which and in 3 of them a septic thrombus was found post mortem.

The mortality rate for the series of 18 cases was 39 per cent. (7 deaths).

Post-mortem Examinations.—Necropsies were carried out on 6 cases. The findings were, briefly, as follows:

Mrs. R.—Septic thrombus in right ovarian vein which had ruptured and was communicating with a large abscess behind the caecum. Splenic infarcts. Pus in right pleura. Terminal endocarditis.

Mrs. G.—Septic thrombus in left ovarian vein, extending to renal and inferior cava. Abscesses in cave of Retzius and behind left ovary. Foci of suppuration in wall of uterus. Infarcts in kidney and lung.

Mrs. S.—Septic thrombus in left ovarian and renal veins. Abscess around left ovary and in uterine wall. Small ulcers in colon and rectum.

Mrs. H.—Retroperitoneal tissues of pelvis honeycombed with foci of suppuration. Pus in both ovaries. Lung infarcts. No septic thrombus found.

Mrs. B.—Septic thrombus in right ovarian vein and inferior vena cava. Thrombus (? septic) also in common femoral vein. Abscess of lung. No infarction of other organs.

Mrs. C.—Sloughing ulcer of endometrium. Abscesses in pouch of Douglas and uterine wall. Infarcts in spleen and lung. Effusion in left pleura.

* One more case—of blood stream infection by anaerobic streptococci (pure culture)—has been met with since this paper was sent in.

Methods Employed for the Cultivation of Anaerobic Streptococci from the Blood.

Schottmüller advocates the addition of 20 c.cm. of the patient's blood to 75 or 100 c.cm. of melted glucose agar (at 45° C.). He incubates this large volume of medium in long tubes, 30 by 5 cm. In order to detect the colonies of anaerobic streptococci (which do not cause any haemolysis or other colour change) it is necessary to dislodge these large cylinders from the glass after incubation and throw them out into a dish, where they are cut up into many slices of 2 to 3 cm. thickness for separate examination.

This procedure appeared to me to be open to several objections: it is laborious; the process of searching for colonies affords too much opportunity for contamination; the splitting of the medium by gas bubbles leads to difficulty in obtaining pure cultures; and the method does not lend itself to application at the bedside.

For these reasons I have not employed Schottmüller's "agar cylinder" method, but have relied chiefly upon fluid media, using only 3 or 4 c.cm. of the patient's blood. The routine procedure for blood culture which I now employ is as follows:

1. One c.cm. of the blood is introduced into a tube of glucose broth (Douglas's digested heart muscle broth with 1 per cent. glucose), to which approximately 0.3 c.cm. of sterile trypsin (Fairchild's "injectio trypsini") has been added in order to counteract the several antibacterial factors—leucocytes, opsonin, etc.—of the blood (vide Douglas and Colebrook, 1916). (It is important to ensure that the trypsin is thoroughly mixed with the broth.) This culture is incubated aerobically and provides good conditions for the growth of any aerobes or facultative anaerobes which may be present in the blood.

2. One c.cm. of blood is introduced into the same broth, but prepared in such a way as to favour the growth of strict anaerobes—that is, the broth is thoroughly boiled and quickly cooled before the trypsin is added (vide R. Dubos, 1928, *re* the presence of a reducing factor in freshly boiled broth) and is then covered with melted vaseline. When required for use the vaseline seal is freed from the glass by gentle local heat and the tube sloped. After addition of the patient's blood and thorough mixing with the broth the tube is again warmed at the top of the fluid in order to reset the vaseline seal.

3. One c.cm. of blood is implanted into a tube of minced meat broth medium, such as that described by Lepper and Martin (1929), under liquid paraffin.

4. In order to determine roughly the number of microbes present in the circulating blood 1 c.cm. of blood is mixed with about 25 c.cm. of melted agar at 45° to 47° C. in a Petri dish and incubated, when the agar has set, in an anaerobic jar (McIntosh and Fildes). When the patient is at a distance from the laboratory and it is inconvenient to provide melted agar at the bedside the procedure is modified by mixing the blood with an anticoagulant—for example, 1.25 c.cm. of 5 per cent. sodium chloride solution, or of 0.5 per cent. sodium citrate solution—and incorporating the whole in the melted agar on returning to the laboratory.

The boiled glucose broth *plus* trypsin (No. 3 supra) has proved in my hands much the best medium for the cultivation of anaerobic streptococci from the blood. The same broth, unboiled and incubated aerobically, has usually failed to grow the anaerobes; it grows the haemolytic streptococci as well as the anaerobic media; and is better than these for the cultivation of staphylococci and *B. coli*. In the plate culture (No. 4 supra) I have only once detected colonies of anaerobic streptococci in the blood, and that with difficulty. It is very useful, however, for the rapid detection of haemolytic streptococci in the blood, and ought to be retained in any blood culture procedures for that purpose.

The question may be asked, How does the above technique of blood culture differ from that employed by me prior to October, 1928, when I failed to cultivate anaerobic streptococci from puerperal infections? It differs chiefly in that cultures Nos. 2 and 3 provide conditions more suited to the growth of strict anaerobes. Prior to 1928 the glucose broth of culture No. 2 was not freshly boiled before the addition of trypsin, and it was not covered with a vaseline seal. Meat medium (culture No. 3) was not employed. These differences appear to me to be of sufficient importance to account for my failure to isolate the anaerobic streptococci from the blood prior to 1928.

It should be added that the primary growth in blood cultures is usually slow—two to seven days; and also so scanty that it is scarcely perceptible by the naked eye. Moreover, subcultures on blood agar are not always successful at first.

Characters of the Strains of Anaerobic Streptococci which have been Isolated.

The investigation of my strains is at present very incomplete, and a full account of it will therefore be held over for publication later. Certain general impressions may, however, be given.

Pure cultures have been obtained of 19 strains derived from the blood of puerperal fever patients, and a few strains derived from uterine cultures. They appear to form a heterogeneous group.

Morphology.—Stained specimens of most of the strains show round cocci similar in size to those of the haemolytic type, but two or three strains show much smaller cocci, resembling Prévot's *Streptococcus micros* or *S. intermedius*. They are Gram-positive, but some of them less strongly so than the more familiar streptococcal types. Chains have usually been very short in the majority of the strains, but this character varies somewhat with the cultural conditions. Several strains show considerable pleomorphism, one of them so extreme that Dr. Mair, to whom I submitted it, was in favour of calling it a leptothrix. Other colleagues agree with me that it exhibits in certain phases perfectly definite streptococcal formation. I have therefore retained it among the anaerobic streptococci for the time being.

Intolerance of Oxygen.—Here again the strains show great differences. Two of them may be classed as "anaerobes of predilection"—that is, they have at times given some growth in the presence of air. Most of them, after repeated subculture, will not grow at all aerobically, but it should be said that no attempt has been made so far to educate them by passage in atmospheres of slowly increasing oxygen tension. In shake cultures (serum agar) the zone free from growth at the top has varied from 0.5 cm. to 5 cm.

Gas Formation.—Ten of my strains, like Schottmüller's *S. putridus*, produce fetid gas in medium containing blood; others produce gas in media free from blood; others, again, have not been observed to form any gas.

Colony Characters.—The majority of the strains, when acclimatized to growth on the surface of blood agar (McIntosh and Fildes jar), produce similar discrete round colonies, transparent at the edge and semitransparent at the slightly raised centre. There is no haemolysis or other discoloration of the medium. The colony substance has little coherence. Colonies in shake cultures are lenticular, but I have not observed the budding lenticular types figured by Prévot.

Growth in Fluid Media.—Glucose broth (boiled) *plus* serum under vaseline has given very poor growth of most of the strains. A minority give rise to turbidity. Moderate degrees of acidity are reached (*p*H between 5.2 and 6.4).

Growth in Human Serum.—Of seven strains so far tested only one was found to grow in normal human serum. If this is confirmed by further testing it will indicate a fundamental distinction between these streptococci and the familiar aerobic types.

Viability in Normal Human Blood.—Four strains were mixed with defibrinated blood under vaseline and incubated for two hours on a rotary drum in order to prevent the corpuscles from settling. With three of the strains the implanted cocci (at the rate of 20,000 to 70,000 per c.cm.) were reduced by 85 to 95 per cent. during the two hours' incubation. With the fourth strain the reduction was somewhat less. After twenty-four hours' incubation none of the blood samples contained living cocci.

Sensitiveness to Organic Arsenicals.—Of two strains tested neither was comparable to the haemolytic streptococci in their sensitiveness to neosalvarsan.

DISCUSSION.

In common with many other writers on this subject I have in the past supported the contention that haemolytic streptococci (*S. pyogenes*) are responsible for nearly all the severe and fatal cases of puerperal fever, and that attention should therefore be concentrated chiefly upon these infections. The data now presented—taken in conjunction with the findings of Schottmüller, Sommer, and Schwarz and Dieckmann—carry the obvious suggestion

that that contention requires to be modified, and that a somewhat different conclusion would have been reached if strictly anaerobic technique had been habitually employed in the investigation of puerperal infections.

The experience of Queen Charlotte's Hospital probably represents a fairly average sample of the septic infections occurring in other large maternity hospitals where a relatively high proportion of complicated labours is dealt with. For a period of nearly two years every septic case (with the exception of one rapidly fatal case of peritonitis which occurred while I was abroad) has been investigated by one or more cultivations from the uterus or the blood, or both, and also from the urine when necessary. There has been no (apparent) epidemic spread of infections during that period.

The records may be summarized as follows:

Women delivered (October 1st, 1928, to June 1st, 1930): 3,674.

Septicaemias giving a pure culture of haemolytic streptococci from the blood during life: 6, with 3 deaths.

Septicaemias giving a culture of anaerobic streptococci from the blood during life: 13, with 5 deaths.

(The cases of localized sepsis due to haemolytic and anaerobic streptococci respectively may be left out of consideration for the reason given above.)

These results show that, during the period of observation, two-thirds of the septicaemic infections have been due to anaerobic streptococci (or to these cocci in association with other microbes) and only one-third to *S. pyogenes*.

In seeking for an explanation of such results, which are apparently in conflict with previous experience of puerperal fever in this country, one is driven to consider four possibilities, namely:

(*a*) That epidemic spread of these infections by anaerobic streptococci occurred in the hospital.

(*b*) That the occurrence of 13 cases of septicaemic infection by these organisms was merely an extraordinary coincidence.

(*c*) That the etiological agents concerned in puerperal fever vary widely from time to time and from place to place.

(*d*) That these cases of infection are in reality not uncommon in this country, but have usually been overlooked by the bacteriologists (including myself) who have investigated puerperal fever.

With regard to (*a*), as stated above, there has been nothing to suggest epidemic spread of these infections in the hospital, although one cannot deny that one or two of the cases may have arisen in this way. The fact that there has been no epidemic of infections due to haemolytic streptococci for several years, although the provision for isolating infected cases leaves very much to be desired, is in itself a fairly reliable indication that the hospital's antiseptic procedure is on the whole satisfactory, and does not favour epidemic spread. In this connexion it is also noteworthy that 5 cases of anaerobic streptococcal infection have been met with among a comparatively small series of cases investigated in three other hospitals during the same period. Further, the fact that no fewer than 8 of the 12 cases had had some intrauterine manipulations is somewhat suggestive of an autogenous origin of the infection.

With regard to (*b*) it need only be pointed out that even if we discount 50 per cent. of the 13 septicaemic cases as having been possibly due to the operations of chance we are still left with 6 cases—that is, as many as in the haemolytic streptococcal group.

There may well be some truth in the suggestion (*c*) that the nature of the bacterial infections occurring after childbirth may vary from time to time, just like the infections of the respiratory tract. Available data lend some support to this conception. Some records—for example, those of the Aberdeen maternal deaths inquiry (Kinloch, Smith, and Stephen, 1928)—seem to show that *S. pyogenes* can be recovered from almost every fatal case of puerperal fever. For some years that was also my own experience. On the other hand, Stacey (1930) has recently reported that only 3 out of 12 cases of sepsis, when death followed unsuccessful attempts to deliver by forceps, were infected by haemolytic streptococci. There is need for further data on this point.

The fourth possibility—that our bacteriological investigations have often been at fault—probably accounts in large measure for the failure to recognize these infections by anaerobic streptococci. Personally, I am satisfied that with the technique I employed prior to October, 1928, many of the blood infections reported in this paper would have been overlooked, and the less severe cases, giving apparently negative blood cultures, would have excited no special comment.

In conclusion, it may be pointed out that if it is established by further investigation that puerperal infection by these anaerobic streptococci is of common occurrence in this country, much that has been written with regard to the epidemiology of puerperal fever, unsupported by bacteriological data, will cease to have any value. The epidemiological problem will at the same time resolve itself into two main divisions—namely, that concerned with the haemolytic streptococci, which are believed to be seldom present in the genital tract before labour, and that concerned with the anaerobic streptococci, which are apparently present in a considerable number of pregnant women.

SUMMARY.

1. Anaerobic streptococci have been isolated from the blood of 17 puerperal fever patients since October, 1928; and from the pleural effusion of one other case whose blood was sterile at the time of culture. In 8 of the 17 cases the blood culture gave a mixed growth—of two types of anaerobic streptococci or of anaerobic streptococci with other species.

2. The incidence of these 17 cases has not been such as to suggest a contagious origin of the infection. Ten of them had required intrauterine manipulations during labour.

3. Seven of the patients died (mortality 39 per cent.). Septic thrombo-phlebitis was found post mortem in 4 cases and infarction in 2 others. Suppuration occurred during life, or was found post mortem, in 9 cases, anaerobic streptococci being always recovered from the pus.

4. Thirteen of the 17 cases of generalized infection by anaerobic streptococci have occurred at Queen Charlotte's Hospital. During the same period there have been only 6 cases of septicaemia (possibly 7) due to haemolytic streptococci at this hospital (3 fatal).

5. The nineteen strains of anaerobic streptococci isolated from the blood of patients appear to form a heterogeneous group. Some of them conform to the *S. putridus* type described by Schottmüller, while others do not.

6. The technique of blood culture which has proved suitable for the isolation of the anaerobic streptococci is described.

7. The view is expressed that puerperal infection by anaerobic streptococci probably occurs much more frequently in this country than has been recognized; and that failure to detect the generalized infections has resulted from the use of unsuitable blood culture methods.

Acknowledgements are due, and are here made, to my colleague Dr. Ronald Hare, who has helped me with some of the bacteriological work on the cases infected with haemolytic streptococci; to the honorary staff of Queen Charlotte's Hospital for permission to refer to cases under their care; to Dr. Joe and Mr. James Wyatt for the same permission with respect to cases at the North-Western Fever Hospital; to Dr. Jenkins, Dr. Morris, and Dr. Bevan Jones with respect to cases at the Hammersmith Hospital; and to Dr. Bendle of the Paddington Infirmary.

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THE EFFECT OF AURICULAR FIBRILLATION ON THE OPERATIVE RISK IN HYPERTHYROIDISM.

BY

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AURICULAR fibrillation is the commonest cardiac irregularity found in Graves's disease. It may occur during the acute stage, as in cases of exophthalmic goitre with severe onset, or be found in patients with toxic goitre of many years' history. Its presence is probably due to the intensity of the thyrotoxicosis in the former, and in the latter to cardio-vascular changes which have been gradually brought about by the long-continued poisoning of the abnormal thyroid secretion.

Willius and Boothby[1] consider that the auricular fibrillation depends on the duration rather than on the intensity of the disease; Tinker[2] is in agreement. Strickland Goodall[3] considers that auricular fibrillation is of rare occurrence in pneumo-mechanical hearts, and usually takes some years to develop in thyrotoxic hearts, although it may occasionally occur spontaneously with the onset of the disease.

Auricular fibrillation is at first usually paroxysmal, and is brought about by effort or by excitement; later on the condition becomes permanently established. Its occurrence in Graves's disease is a serious factor in the gravity of this condition, and, if untreated, will lead in a short time to congestive failure. Hamilton[4] in investigating 50 cases of Graves's disease with congestive failure found auricular fibrillation present in 39. Out of 230 cases of Graves's disease Read[5] found persistent auricular fibrillation present in 17; in 16 of these there was congestive failure. Dameshek[6] found 10 cases with permanent fibrillation out of 23 patients having Graves's disease with congestive failure.

Auricular fibrillation is more frequently found in toxic goitres, in which there is usually several years' history of thyroid enlargement with toxic symptoms. One would therefore expect its presence more commonly in patients over the age of 40; in my series 66 per cent. of patients were over this age, the average being 44.3 years. In 75 cases of Graves's disease with auricular fibrillation Phillips and Anderson[7] found the average age to be 47.

It is my experience that all cases of exophthalmic and toxic goitre of moderate severity will in time reach the stage of auricular fibrillation with congestive failure unless the source of intoxication is removed. There seems every likelihood that a large number of cases of auricular fibrillation found in elderly subjects, and considered to be the result of degenerative myocardial changes, are really the sequels of a past thyrotoxicosis. Lahey and Hamilton[8] consider that every case of auricular fibrillation should be suspected of hyperthyroidism if there is a discrepancy between the patient's condition, history, and heart findings. Colvin and Smith[9] find that auricular fibrillation is often the only sign of a thyrotoxic heart, the thyrotoxicosis being missed on account of the smallness of the thyroid gland and the absence of eye signs.

The present paper is the result of my investigation of 356 consecutive cases of Graves's disease, exophthalmic and toxic, in which all but four had operative treatment; 315 were cases of exophthalmic goitre, and 41 of toxic goitre. Thirty cases of auricular fibrillation were found, 22 among the exophthalmic goitre cases and 8 among the toxic. This gives an incidence of 6.98 per cent. and 19.5 per cent. respectively, and a total incidence of 9.52 per cent. Hamilton[4] found 18 cases of auricular fibrillation out of 200 patients (11 per cent.); Kerr and Henzel[10] detected auricular fibrillation in one-third of their cases, but of these 80 per cent. were paroxysmal. Krumbhaar[11] found only 3 out of 51 (5.9 per cent.). Read had 17 cases of auricular fibrillation among 230 cases of Graves's disease (7.4 per cent.). Goodall, however, found this arrhythmia in 20 per cent. of thyrotoxic hearts; and Willius and Boothby in 377 thyrotoxic cases obtained auricular fibrillation in 22 per cent. of exophthalmic goitres and in 24 per cent. of toxic. It is probable that in my series a certain number of cases with transient auricular fibrillation may have been overlooked; this would make the incidence slightly higher.

Permanent auricular fibrillation is a far more serious complication than is the transient form, although the latter tends to become permanent in course of time if the toxin is not removed. Transient auricular fibrillation occurs not infrequently immediately following partial removal of the thyroid, although it is extremely rare after ligation of the thyroid vessels. It usually lasts a few days only, and may be merely of a few hours' duration. In cases of permanent auricular fibrillation removal of the thyrotoxicosis will often result in the restoration of normal rhythm without the exhibition of any drug.

Dunhill, Fraser, and Stott,[12] recording 15 cases of Graves's disease complicated by auricular fibrillation, 11 being permanent, state that 3 out of the 4 transient cases occurred after operation. They came to the conclusion that auricular fibrillation, if once established, will persist without treatment, and may continue even after the removal of the thyrotoxicosis. Dunhill[13] in a later paper stated that 80 per cent. of his patients regained normal rhythm after adequate removal of the thyroid. Smith and Colvin[9] found a return to normal rhythm in 50 per cent. of their cases after operation, the average time taken for this to occur being twenty-five days. Hamilton,[4] reporting 18 cases with auricular fibrillation, of which 6 were transient, found that in all the transient and in 5 of the permanent normal rhythm was regained after operative treatment.

In my series (Table I) there were 12 transient cases, of which 10 occurred after partial thyroidectomy; in the remainder paroxysmal attacks of auricular fibrillation were noted electro-cardiographically prior to operative treatment. In all 12 cases normal rhythm was re-established within

TABLE I.

	Transient A. F.		Permanent A. F.		Death.
	N.R.	N.C.	N.R.	N.C.	
Exophthalmic goitre with auricular fibrillation					
No operation	—	—	—	2	1
Ligation	2	—	1	1	1
Partial thyroidectomy	5	—	5*a*	2*b*	2
Total	7		6	5	4
Toxic goitre with auricular fibrillation					
No operation	—	—	—	1	0
Ligation	—	—	—	—	0
Partial thyroidectomy	5	—	1	1	0
Total	5		1	2	0

N.R. = Normal rhythm. N.C. = No change.
a = One case auricular fibrillation recurred four months later.
b = One case normal rhythm restored by quinidine.

one week of the operation, without quinidine being administered. Of the 18 cases with permanent fibrillation there were 4 deaths, 3 following operation; one patient's condition was considered too serious for any operative procedure. Of the remaining 14 cases, 7 became normal within a few days of operation, and in 7 the irregularity persisted. Of these 7, 3 were not operated upon, 3 had partial thyroidectomy performed, and in one the superior thyroid vessels were tied. One of those cases in which normal rhythm was restored by partial thyroidectomy relapsed into auricular fibrillation four months later. In

one an irregular rhythm persisted in spite of partial thyroidectomy, but normal rhythm returned after 154 grains of quinidine, and has persisted for two years. Thus of the 11 cases of permanent auricular fibrillation operated on, normal rhythm was restored and remained permanent in 6, whereas in 5 the irregularity persisted; thus restoration of the normal rhythm occurred in 55 per cent.

Out of the 356 cases investigated the total mortality was 20. Of this number one patient, who had exophthalmic goitre complicated by auricular fibrillation and severe myocardial damage, died without any operation being performed. All the remaining deaths occurred after operation. Of these, 17 occurred in exophthalmic goitre cases and 3 in toxic goitres. Three of the exophthalmic goitre deaths were those of patients with auricular fibrillation; of these, one occurred after partial thyroidectomy, a second after lobectomy, and a third after ligation of the right superior thyroid artery only.

Partial thryoidectomy with removal of three-quarters to seven-eighths of the gland was the usual procedure, unless there was a definite contraindication, when a primary ligation of one or more of the thyroid vessels was followed three or four months later by partial thyroidectomy. Only one death ensued after simple ligation—namely, the case with auricular fibrillation already mentioned.

The following table (Table II) shows a comparison of the absolute and percentage mortality after operation between cases of Graves's disease, with and without auricular fibrillation.

TABLE II.

Condition.	Total Cases.	Absolute Mortality.	Percentage Mortality.
Exophthalmic goitre without A.F. ...	293	13	4.4
Toxic goitre without A.F.	33	3	9.1
Exophthalmic goitre with A.F.	19	3	15 8
Toxic goitre with A.F.	7	0	0
Total cases of Graves's disease without A.F.	326	16	4.9
Total cases of Graves's disease with A.F.	26	3	11.5

Although the numbers are small the post-operative mortality is increased by the presence of auricular fibrillation in these cases. The percentage is more than doubled. Another fact brought out by the above table is that the presence of auricular fibrillation in exophthalmic goitre is of much more serious import than in toxic goitre. This is not surprising if one considers the view expressed in an earlier part of this paper—namely, that auricular fibrillation is a natural sequel of prolonged thyrotoxicosis, such as occurs in patients with toxic goitres, whereas its occurrence in exophthalmic goitre, in which the symptoms are usually of a few months' duration only, points to a severe grade of poisoning. On the other hand the mortality of exophthalmic cases without auricular fibrillation is less than half that of toxic goitres without auricular fibrillation.

The presence of auricular fibrillation in Graves's disease must be considered a distinctly unfavourable complication as regards the operative risk. It is associated, as a rule, with cardiac enlargement, a rapid pulse rate, and signs of congestive failure. The effect of the excessive thyroid secretion, as shown by the raised basal metabolic rate, is aggravated by an added impairment of cardiac function due to the congestive failure. It is essential, therefore, that the thyrotoxicosis should be reduced, and the ventricular rate controlled, before operative procedure is contemplated. At the Royal Free Hospital Lugol's solution in increasing doses up to 30 minims daily and digitalis tincture in doses of 10 to 20 minims three times daily are given, until the optimum state of the patient is reached, and the nature and extent of the operation is dependent on the degree of improvement attained. Digitalis is well borne by these patients, and they can take larger doses than patients suffering from other types of auricular fibrillation without intolerance. I have never found any untoward effect from digitalis medication.

Conclusions.

1. Auricular fibrillation occurs rather more frequently in toxic than in exophthalmic goitres.
2. Its presence in exophthalmic goitres is more serious than in toxic goitres, as shown by the increased post-operative mortality.
3. Auricular fibrillation is not of itself a contraindication to operative treatment, although it is an added risk.
4. The need for thorough pre-operative medical treatment is intensified by the presence of auricular fibrillation.
5. Primary ligation deserves careful consideration as a means of treating severe cases. In most cases, when one or more of the thyroid vessels have been tied, the improvement in the general and cardiac condition of the patient has allowed the major operation to be performed without undue risk.

My thanks are due to my colleagues Mr. Cecil A. Joll and Mr. L. E. C. Norbury for their kindness in giving me the opportunity of collaborating with them in the treatment of their cases, and to Miss Geraldine Barry, surgical registrar, for her help in collecting certain particulars for me from the case records.

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URETHRAL CALCULI—ANCIENT AND MODERN.

BY

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DURING the last year two urinary calculi have been presented to the Pathological Museum of the University of Egypt. These calculi show so remarkable a resemblance of form, the one to the other, that I have ventured to make a few notes upon them.

The smaller stone (Fig. 1) was removed in December, 1928, by Dr. Katib, assistant surgeon to the Kasr-el-Aini

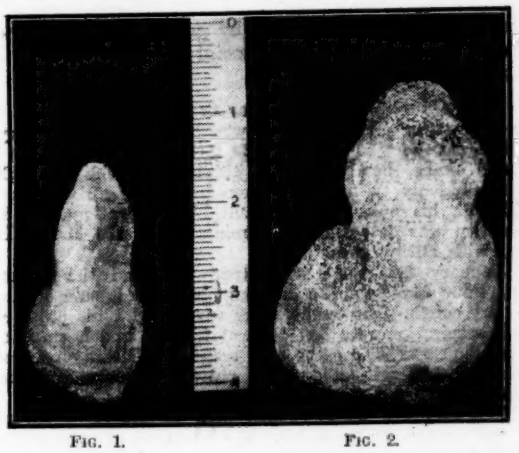

FIG. 1. FIG. 2.

Hospital, Cairo, from the urethra of a boy 8 years of age. The history which accompanied the specimen stated that the child complained of a lump in the scrotum and perineum. No complaint was made of pain or frequency of micturition. The flow of urine was not interfered with. A slight urethral discharge was present. The stone was cut down upon and removed, and the boy made a perfect recovery. The stone itself weighed 41.5 grams, and is

seen to consist of a large lower bulbous portion, a somewhat indistinct neck, and an elongated extremity. The surface of the stone is almost smooth. In length it measures 2.75 inches, while its greatest diameter is 1.5 inches. Some particles removed from the outer surface give the chemical reaction for phosphates. When the stone was removed from the urethra it was found to be lying in a widely distended urethral canal. The large globular mass rested in the bulbar urethra, the slim end extended towards the bladder. The wall of the urethra was inflamed but showed no sign of actual ulceration.

The larger stone (Fig. 2) was presented to the museum in 1929 by Mr. Guy Brunton, who found it in the grave of a man of the early 18th Dynasty, while he was undertaking archaeological research some twenty miles south of Assiut. The stone was found in the neighbourhood of the pelvic bones. The stone, though larger in every way than that previously described, bears a very strong family likeness to it. This specimen weighs 110.5 grams, in length it is 3.75 inches, while its greatest diameter is 2.75 inches. It consists also of a bulbous lower portion, a neck, which is marked by a very evident sulcus, and an elongated extremity. The surface is rough, as if it had been lying in a septic cavity. Scrapings from the surface give the phosphatic reaction.

In comparing the two specimens so similar in shape and moulding, one might suggest that as the former is known to have occupied the urethral canal of a boy of 8, the other might well have occupied a similar position in the man of the 18th Dynasty. The sulcus, which is very evident and forms the neck of the stone obtained from the adult, is present to a lesser degree in the stone from the boy, and has probably been produced by the pressure of the anterior layer of the triangular ligament. We also know that a stone weighing 41.5 grams can be accommodated by the urethra of a boy of 8 years without causing any grave inconvenience. Could not the adult urethra accommodate a calculus of 110.5 grams? In this case, however, the roughened outer surface of the stone suggests that a considerable urethral discharge was present, due to some inflammatory disturbance about the area occupied by this calculus.

PNEUMONIA AND EMPYEMA DUE TO A NON-LACTOSE-FERMENTING BACILLUS.

BY

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THE following is an account of a case of pneumonia and empyema apparently caused by a non-lactose-fermenting coliform bacillus possessing special biochemical and agglutinative characteristics.

HISTORY OF CASE.

The patient, a man aged 21, was admitted on January 19th, 1929, as a case of "influenza." He gave a history of pain in the back and limbs, headache, sore throat, and slight cough commencing suddenly twenty-four hours previously. His temperature was 103° F., his pulse rate 98, and his respiration rate 24. No abnormality was detected on examination of the chest. He was treated with antipyretics.

On January 21st the temperature fell, and the patient felt better. Four days later he had pain in the left side of the chest and a dry cough. His temperature was 103° F., his pulse rate 88, and his respiration rate 30. Pleural friction and a small area of dullness appeared below the left scapula. Within one week the temperature had settled, and the patient's general condition was rapidly improving.

On February 3rd he developed pain in the right side of the chest and frequent dry cough. His temperature was 102° F., his pulse rate 94, and his respiration rate 40. The patient felt and looked very ill. Pleural friction was present on the right side. Dullness of the right base developed, and slowly increased during the next few weeks. A temperature of the swinging type persisted.

On February 23rd a needle was introduced into the right pleural cavity and 35 ounces of fluid were aspirated. On four more occasions pus was aspirated, and finally the patient was sent to the surgical side for rib resection and drainage of the pleural cavity. Uninterrupted recovery followed. During the whole illness there were no signs of intestinal disturbance.

BACTERIOLOGICAL EXAMINATION.

Three specimens of pus aspirated from the pleural cavity on different dates were examined, and a Gram-negative bacillus was isolated on each occasion, giving the same biochemical and agglutination reactions.

Morphology and Fermentation Reactions.

A profuse growth on agar was obtained in twelve hours of colonies having the typical appearance of the coliform group and consisting of highly motile Gram-negative bacilli about 4 μ long and 0.5 μ broad, showing the following reactions when observed over a period of thirty days.

Glucose, mannite, maltose, sorbite, and galactose: formation of acid and gas.
Lactose, saccharose, dulcite, salicin, inulin, adonite, and raffinose: no change.
Litmus milk: slight acid and curdling by fourth day; alkaline from eighth day onwards.
Lead acetate: no blackening.
Gelatin: not liquefied in six weeks.
Indole reaction: negative.

The organism therefore differed biochemically from the salmonella group only in its failure to attack dulcite. Most members of the salmonella group produce acid and gas in inosite, but some, like this organism, do not. Blood culture yielded no growth. This was taken when the temperature had fallen, too late to be of much value.

Agglutination Tests.

A Widal test yielded the following results:

Patient's serum + *B. paratyphosus* A = no agglutination.
Patient's serum + *B. typhosus* = agglutination up to 1 in 15.
Patient's serum + *B. paratyphosus* B = agglutination up to 1 in 120.
Patient's serum + unknown organism = agglutination up to 1 in 3,200.

The organism was then typed against stock antiserums for *B. typhosus* B, *Paratyphosus* A, and Gaertner's *bacillus*, but no agglutination was obtained. The results of typing against antiserums for *B. paratyphosus* B and *B. aertrycke* (Glasgow) were as follows.

Emulsion of Organism.	Dilutions of B paratyphosus B Antiserum.						
	100	200	400	800	1,600	3,200	6,400
B. paratyphosus B ...	+++	+++	+++	+++	+++	+++	+++
Unknown organism ...	+	+	±	∓	−	−	−
B. aertrycke (Glasgow) ...	++	+	+	+	±	−	−

Emulsion of Organism.	Dilutions of B. aertrycke (Glasgow) Antiserum.							
	400	800	1,600	3,200	6,400	12,800	25,600	51,200
B. aertrycke (Glasgow) ...	+++	+++	+++	+++	+++	+++	+++	+++
B. paratyphosus B ...	++	+	±	∓	−	−	−	−
Unknown organism ...	+	±	±	±	±	∓	−	−

+++ quite clear, complete sedimentation.
++ not quite clear, almost complete sedimentation.
+ not clear, definite sedimentation.
± and ∓ slight degree of sedimentation.

A vaccine was made containing 500 million of the unknown organism per c.cm. and injected intravenously into

Emulsion of Organism.	Dilutions of Antiserum to unknown Organism.						
	160	320	640	960	1,280	2,560	5,120
B. typhosus	−	−	−	−	−	−	−
B. paratyphosus A	−	−	−	−	−	−	−
B. suipestifer (Lister Institute)	+	+	−	−	−	−	−
B. aertrycke (Smethwick) ...	++	++	+	−	−	−	−
B. paratyphosus B	++	++	+	+	−	−	−
B. aertrycke (Beveridge) ...	+++	++	++	+	+	−	−
Unknown organism	+++	+++	+++	+++	+++	+++	++

a rabbit at five-day intervals in doses of 0.1, 0.2, 0.5, and 1 c.cm. The rabbit's blood was drawn off twelve days after the last injection and set up against emulsions of various organisms.

DISCUSSION.

These tests show that while the organism has, antigenically as well as biochemically, something in common with *B. paratyphosus* B and *B. aertrycke*, it is distinct from these organisms.

The clinical course of the infection bears a striking resemblance to that of many cases of psittacosis. The sudden "influenzal" type of onset, the dry cough, the slow pulse and respiration rate compared with the high temperature, are found in psittacosis, but there is no history in the case of contact with a parrot, and the organism differs from the strains which used to be considered the cause of psittacosis.

Eighteen months previously the patient had been inoculated with T.A.B. vaccine, and this might account in part for the high agglutination of *B. paratyphosus* B by his serum, but the group relations demonstrated between the infecting organism and *B. paratyphosus* B are more likely to account for this agglutination.

The organism is therefore closely allied to the *paratyphosus* B–*aertrycke* group, but differs materially from these organisms in failure to ferment dulcite and in its specific serological qualities.

I wish to thank Dr. Logan for his advice and interest during the study of this organism, and Dr. Goodall for permission to use the case notes. The expenses of the investigation were defrayed by a grant from the Moray Fund.

CONGENITAL DISLOCATION OF THE KNEES TREATED BY MANIPULATION.

BY

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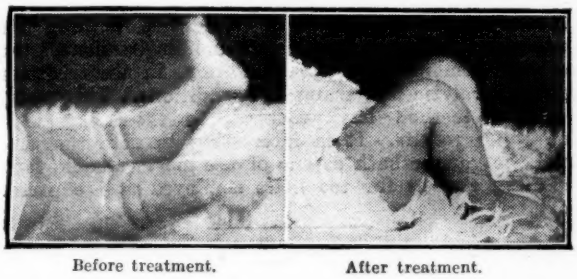
THE case under consideration is that of a baby girl who was brought for treatment with double congenital dislocation of the knees when only 16 days old. With the exception of this congenital deformity she was normal and well developed. The delivery was a non-complicated vertex. The knees could manually be acutely hyperextended on the thighs, but could not be flexed. A photograph taken



Before treatment. After treatment.

reveals hyperextension with resultant folds on the dorsum of the limb above and below the knees. The left leg was in a position of valgus with eversion; the right did not have this malposition.

Manipulation was started on the right knee, and the limb placed on a malleable posterior splint, which was bent to the required angle after each manipulation. Daily massage was ordered for the posterior muscles of the limb. Treatment of the left knee was started a fortnight later; the right was then progressing favourably. The sittings were twice weekly for the first month and later once weekly, without any anaesthesia. When flexion was advancing, the posterior splint had to be changed for an angular malleable anterior splint. In four weeks the right knee was completely reduced, and later the child resisted any hyperextension, and cried when this was attempted. The left knee was more troublesome owing to the eversion of the leg. This, however, has now been reduced. The child has been under treatment for the last eight months, and can be supported on her limbs, the knees being quite stable.

Radiographs were taken before and after treatment, the latter showing reduction of the dislocation. The left limb shows traumatic separation of the periosteum produced by the forcible correction of the eversion.

Left knee before treatment. Left knee after treatment.

Right knee before treatment. Right knee after treatment.

Such cases as the one here recorded are comparatively rare, and, when not complicated by the congenital abnormalities, are undoubtedly due to malposition *in utero*, and should yield excellent results with simple conservative manipulation without anaesthesia when taken in hand early.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE VITAMIN A CONTENT OF GHEE.

GHEE is the clarified fat of cow's milk or buffalo's milk. According to E. R. Bolton,[1] "it is prepared by inoculating freshly boiled milk (usually buffalo) with sour milk, and after curdling has taken place, churning in a rather primitive manner. The fat so obtained is skimmed off, allowed to become somewhat rancid, and then heated in earthen pots until the water has evaporated. The fat clarifies on standing, and when sufficiently clear is run off from the sediment and constitutes 'ghee.'" This heating or "rendering" is in some cases followed by a second similar treatment, or "re-rendering." Ghee is an important constituent of Indian dietary; its vitamin content is consequently a matter of considerable interest.

In 1922 Ghose[2] recorded some observations on ghee, in which he found vitamin A to be present. His results were obtained before vitamin A had been distinguished from vitamin D. They are therefore subject to the same inconsistencies of interpretation as are all results of investigation into the fat-soluble vitamins before that distinction had been recognized. By the courtesy of Dr. F. N. Moos of the Goculdas Tejpal Hospital, Bombay, we were recently put in possession of five samples of Indian ghee. The first example was of unspecified origin, and was not further examined. The remaining samples, Nos. 1, 2, 3, and 4, came each from a different hospital in or near Bombay.

[1] Bolton, E. R.: *Oils, Fats, and Fatty Foods.* Churchill, 1928, p. 129.
[2] Ghose: *Biochem. Journ.*, 1922, xvi, 35.

They arrived either in ground-glass stoppered jars or in sealed tins, and there is no reason to assume that their vitamin content had diminished appreciably during transit.

As a preliminary step samples of all four fats were saponified; the unsaponifiable matter from each was dissolved in chloroform, and the chloroform solutions were submitted to a modified Carr and Price test with antimony trichloride, under conditions which have been carefully standardized in the Glaxo laboratories during three years. It was found that samples Nos. 1 and 3 showed no trace of blue colour; sample No. 2 showed a trace, which was almost unmeasurable; sample No. 4 showed an amount corresponding to 1/500 of that shown by a standard cod-liver oil, and about 1/10 of that shown by average butter. By a standard cod-liver oil is meant an oil of such chromogen content that 0.02 gram of the oil dissolved in chloroform and treated with the reagent in a total volume of 2.2 c.cm. would give in a 1/2 inch cell a reading of 10 Lovibond units on the Rosenheim-Schuster tintometer.

One gram of ghee No. 2 was therefore fed daily to a rat, whose reserves of vitamin A had been depleted on a diet adequate in other respects. After a temporary small increase of growth, which was probably not significant, the animal rapidly lost weight, and developed marked xerophthalmia. Other animals of the same litter fed 5 mg. per day of an active cod-liver oil, showed definite increases in weight, and developed no signs whatever of xerophthalmia. Although the test on this sample of ghee was conducted on only one animal, the colour reaction had suggested its superiority over the other three samples; none the less it was found that the effect of 5 mg. of cod-liver oil was markedly superior to that of two hundred times the quantity of ghee. These results clearly indicate that the ghee must have been for practical purposes devoid of vitamin A, and this in turn suggests that the other three samples were at least as deficient. From the description of ghee given in Ghose's paper it is clear that there must be very considerable variations in its method of manufacture. Our samples were selected, we understand, as typical of those to be obtained in the open market. The sample of fresh ghee examined by Ghose, even if his results were confirmed by modern technique, was quite possibly not typical in its vitamin content. The results given in this note, limited though the investigation has been to a superficial survey, suggest that the problem, which is clearly of importance to Indian dietitians, needs some fuller and more official investigation.

Miss E. Allchorne, Miss V. Hazley, and Mr. E. L. Smith, M.Sc., have co-operated in the biological and chemical work described here, and I would like to take the opportunity acknowledging their assistance.

London, N.W.1. A. L. BACHARACH, B.A.Camb., F.I.C.

GALL-STONES PASSED THROUGH A SINUS IN THE BACK.

THIS condition is extremely rare, and the following case seems to be worth recording.

A housewife, aged 74, who had had five children, was admitted to the Norfolk and Norwich Hospital on December 6th, 1929. For the last four years she had been having attacks of stabbing pain in the right side of the abdomen and between the shoulder-blades. At first the attacks were not very severe, but the last two had persisted for twenty-four hours, and had been associated with jaundice and the passage of clay-coloured stools. Altogether there had been about a dozen attacks.

Two months before admission an abscess appeared in the left lumbar region. This was lanced, and has discharged thin, yellow pus since, and also, at irregular intervals and independently of the attacks of pain, six faceted gall-stones, each about the size of a pea. Neither bile, urine, nor faeces was present in the discharge, which often amounted to two ounces in the twenty-four hours.

The patient looked healthy and younger than her years. She was neither fat nor jaundiced. There was no tender area or tumour palpable per abdomen. The opening of the sinus in the back was opposite the spine of the second lumbar vertebra and two inches lateral to it on the left side, and admitted the point of a fine probe.

The urine contained sugar, but no albumin or acetone; urine diastase was 5 units; resting blood sugar was 238 mg. per 100 c.cm. After 20 c.cm. of lipiodol had been injected into the sinus, *x*-ray examination showed that the tract extended upwards and across to the right side via the region of the pancreas to that of the gall-bladder. It gave off a small branch, which passed downwards just to the right of the vertebral column.

At operation, under gas oxygen and ether anaesthesia, the gall-bladder was found to be only a small fibrous remnant but it contained one gall-stone. It was opened, and the stone was removed. No bile escaped. The pancreas was thickened, and there was much fibrosis round the gall-bladder, but no other stone was felt. The wound was closed with drainage. Post-operative vomiting was severe, and on the third day bile began to discharge from the wound. After three weeks the bile ceased to flow, and after two months the patient was discharged. Her general condition was excellent, and there was only a slight exudate from each sinus. The resting blood sugar was down to 140 mg. per 100 c.cm., and the glycosuria no longer persisted. One month later both sinuses had completely healed.

I can find no record of a similar external biliary fistula in the literature, and should like to express my thanks to Mr. M. W. Bulman for permission to publish the details of this case.

Woking. F. H. MCCAY, B.A., M.B., B.Chir.Cantab.

Reviews.

PRINCIPLES OF HYDROLOGY.

NEW books and papers on hydrology are calling attention to this time-honoured branch of practice. Drs. R. G. GORDON and F. G. THOMSON,[1] from their experience at a great English spa, set out to apply physiological principles to the known effects of external treatment by baths. They are inclined to the view that the activity of medicinal waters depends a good deal on their physical properties, such as the degree of ionization, the colloidal state of their ingredients, and their radio-activity. In a series of concise chapters they summarize the action of *baths* on the organic systems—skin, circulation, nervous system, and metabolism—showing that on physiological grounds hydrotherapy has a rational place in medical treatment. This admirable survey of physiological foundations should be useful, not only for hydrologists, but for the family practitioner, who does not always realize the value of surface treatment. Many forms of external treatment are actually at his disposal, in the home and at the health resort, to rectify abnormal conditions in the skin and in the peripheral and deep circulations. These often play no little part in the causation of disease, especially in temperate climates and in frigo-sensitive persons. The authors refer to the value of "sedative bathing" as "insulating the body from external impressions," and also, when combined with manipulation, in the treatment of many paralytic and traumatic conditions. This revival of an old method has produced, in their experience, encouraging results. It is interesting to note that they regard the vapour bath as one of the most valuable forms of bathing and as far too little employed at the present time.

ANTIVIRUS THERAPY.

IN a volume entitled *Antivirusthérapie*,[2] Professor BESREDKA has given us a further exposition of his views on immunity and their practical application in the various branches of medicine. The first chapter is devoted to a consideration of the nature and mode of action of antivirus. An antivirus is a filterable growth-product of an organism cultivated in nutrient broth, which, according to the author, is capable of exciting a specific immunity when applied to the tissues locally. The usual method of preparation is to filter a broth culture which has been incubated for ten or more days, though acting on a culture by means of a bacteriophage will give a satisfactory product, and in case of emergency filtration may even be dispensed with and the whole culture used after keeping it at 100° C. It is rather difficult to understand exactly how these antiviruses do their work. Besredka's view is that they desensitize the susceptible tissue cells, which

[1] *The Physiological Principles of Hydrology.* By R. G. Gordon, M.D., D.Sc., F.R.C.P.Ed., and F. G. Thomson, M.D., F.R.C.P. Modern Treatment Series. London: J. Cape. 1930. (Cr. 8vo, pp. 131. 5s. net.)

[2] *Antivirusthérapie.* Par A. Besredka. Paris: Masson et Cie. 1930. (5½ × 9, pp. viii + 429. 40 fr.)

then behave towards the invading bacteria as though they were saprophytes; but this is hardly an explanation of the mechanism of the phenomenon, it is merely a restatement of the end-result observed. Of one thing the author seems quite convinced, and that is that antibodies play no part in bringing about this immunity, though his reason for thinking so—namely, that no antibodies are capable of demonstration—does not seem to us entirely satisfactory. In passive immunity to a virus such as vaccinia or foot-and-mouth disease, for example, it would be extremely difficult to demonstrate the presence of antibodies in the passively immunized animal though one knows that the insusceptibility of its tissues is the work of the antibodies contained in the serum inoculated. But Besredka would have little use for such an argument.

The last chapter of the book is devoted to local serotherapy, and the author cites many examples to show how much more effective it is to apply an antiserum direct to the seat of infection than it is to apply it indirectly via the circulation. This would appear logically sound, and probably most people would agree with him, but they would not accept his explanation of the mode of action of the antiserum. Antivirus excites immunity by desensitizing cells, not by calling forth the production of specific antibodies, and since an antiserum locally applied is equally effective in producing an immune state, it must therefore contain antivirus. Such reasoning is surely unsound. However, leaving aside the question of how antivirus acts, what can be said of the therapeutic results obtained by its aid? The major portion of the book is devoted to this, and glowing accounts are given of the cures to be obtained by this form of therapy in the different realms of disease. It is somewhat surprising that a method so simple of application—which can so rapidly effect a cure of such obstinate conditions as long-standing blepharitis and chronic cervicitis and various forms of colitis, to cite only a few examples—should have little or no vogue in this country.

The majority of the workers in England who have essayed Besredka's methods are not enthusiastic, whereas on the Continent wonderful successes are recorded. What is one to believe? As in most disputes of this kind, the whole truth is probably with neither party.

HUMAN BIOLOGY AND RACIAL WELFARE.

DR. E. V. COWDRY has edited a collection of twenty-five essays in a volume entitled *Human Biology and Racial Welfare*[3] by twenty-eight contributors, nearly all from the United States of America, among whom Professor J. F. Fulton, who was recently elected to the chair of physiology at Yale, collaborates with his former chief, Sir C. S. Sherrington, on nervous integration in man. Specialization is essential for the advance of knowledge, but there is a real danger that the individual worker may thereby tend to become isolated and narrow-minded. This liability to thought-tight compartments is also unfortunate for science as a whole, because many of the problems urgently crying for solution are on the borderland of the sciences which make up human biology, and therefore require team work. This book, which is accordingly designed to obviate the drawbacks of specialization, is intended for two groups of readers: in the first place for students, especially those of medicine, who are about to specialize and can do so more intelligently after they have seen in perspective what lies ahead of them, and, secondly, for more mature men occupied in science or business who are anxious to gain a deeper insight into the problems of life.

The work is divided into five parts; the first, on life in space and time, is written by Professor H. Norris Russell, director of the Princeton University Observatory. In the second part, on the origin of man, there are six articles: Professor A. B. Macallum deals with the biochemistry and other aspects of evolution, such as the cerebral and the mental; in the classification of the races of mankind Aleš Hrdlička, curator of the division of physical anthropology, U.S. National Museum, Smithsonian Institute, considers but dismisses the theory of race degeneration. Part 3, on man as a physiological unit, naturally begins with the editor's description of the vital units called cells, and is continued by Dr. Alexis Carrel's essay on the relations of cells to one another, by Professor W. B. Cannon on the integrative action of the vascular system, by Sir Charles Sherrington and Dr. J. F. Fulton on nervous integration in man, and Dr. Clark Wissler, professor of anthropology at Yale, on the integration of the sexes—marriage. The important subject of the effects of environment is discussed in no fewer than eight articles on the influence of special factors such as climate, food, rural or urban residence, and education, the contributors including Sir Humphry Rolleston, and Professors Haven Emerson, McCollum, and Zinsser. The fifth and last part of this interesting volume is entitled "The future," and begins with an able article on the inheritance of disease, by the late Paul A. Lewis, who lost his life while investigating yellow fever at Bahia, Brazil, last year. Professor Raymond Pearl writes with authority on the biology of human populations, Dr. C. B. Davenport on the mingling of races, and Professor Conklin on the purposeful improvement of the human race.

We must heartily congratulate the editor on the success of a work embodying a great deal of valuable information by such an eminent team.

[3] *Human Biology and Racial Welfare.* Edited by Edmund V. Cowdry, Professor of Cytology, Washington University, St. Louis. With an introduction by Edwin R. Embree. London: H. K. Lewis and Co., Ltd.; New York: P. B. Hoeber, Inc. 1930. (6 × 9½, pp. xviii + 612; illustrated. 28s. net.)

NASAL SINUSITIS AND GENERAL MEDICINE.

THE views of DR. PATRICK WATSON-WILLIAMS on the accessory sinuses of the nose as a site of focal sepsis have long been familiar through the medium of numerous papers, lectures, and demonstrations. In *Chronic Nasal Sinusitis and its Relation to General Medicine*[4] he has now collected much of this scattered material and presented his matured opinions. In this country it was Dr. William Hunter, one of the great men to receive no official recognition, who introduced the new principle of focal sepsis into medicine, and it is now accepted as commonplace. It must, however, from its nature suffer from a certain vagueness and lack of sharp definition, and consequently it lends itself easily to exaggeration. This tendency is carefully avoided by Dr. Watson-Williams in his own domain, and he spares no pains to support his thesis with full pathological data, taken from both morbid anatomy and bacteriology. He is less cautious in accepting the statements of others, for example, when it is said that focal sepsis can produce errors of refraction, though it may be admitted that such errors might not cause symptoms in the absence of toxic absorption; and, again, the statement that a certain type of optic neuritis, "the abdominal eye," is regularly cured by removal of an infected gall-bladder, recalls some lines of thirty years ago, written by a well-known medical versifier, and entitled "All my eye."

All the possible systemic manifestations of focal sepsis are fully described, but to specialists those parts of the book which will be most instructive are the chapters on endorhinoscopy, on diagnostic suction, and on operative technique. The part on nasal endoscopy describes in detail the use of the electric endorhinoscope, and is illustrated by a number of fine drawings which almost make a small atlas of the subject. It seems that this instrument has not come into use so generally as it deserves. The author shows that it can provide information to be obtained in no other way. The diagnostic and operative technique demanded in the class of case under consideration has been evolved by Dr. Watson-Williams himself, but as the accessory sinuses of the nose have been the subject of intensive study by distinguished writers in many different countries it is not likely that his conclusions will be universally accepted, nor does he expect it. Nevertheless his opinions and methods are worthy of sympathetic attention. The presentation of the case as a whole is not altogether happy. There is much repetition, which often makes tedious reading, important misprints are too numerous, and the legends below the radiograms on page 130 are misplaced.

[4] *Chronic Nasal Sinusitis and its Relation to General Medicine.* By Patrick Watson-Williams. Bristol: J. Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. 1930. (Med. 8vo, pp. xvi + 221; 109 figures. 15s. net.)

EDUCATIONAL PSYCHOLOGY.

AN excellent book for those who are interested in the application or contribution of psychology to education is the volume entitled *Educational Psychology*,[5] by Rudolf Pinter, a professor in Columbia University. It is no doubt intended primarily for teachers themselves, but it should attract a wider class of readers than this. Parents may derive considerable benefit from its perusal, and it should help many medical practitioners to a better understanding of problems in connexion with the education of children upon which they are often asked to give advice. It has a bearing upon the training of the adolescent and the adult as well as on the schooling of children. It does not follow the older conventional psychological arrangement adopted by many other textbooks of the subject, but accepts the more modern presentation, and has regard to the recent developments in the field of psychological and educational measurements. In this case, at any rate, there is justification for the publishers' note, which claims that the book is "an admirably lucid and comprehensive exposition. Professor Pinter has sifted the whole of psychology and given, in simple and practical form, the essentials needed for educational purposes. The interest is enhanced by many charts and diagrams, and the whole forms an admirable introductory textbook to the subject."

The author treats his subject in two chief divisions: the original nature of the individual to be educated, and the modifications of that nature which it is desired or desirable to attempt to bring about; it is recognized that this division is merely a matter of convenience and largely artificial. "We never find original tendencies and modifications clearly differentiated in any individual. Modifications begin at birth and are continually taking place. Yet every modification is influenced by the original tendencies of the child. There is thus a continual interaction." In the first part of the book there is an adequate and well-proportioned discussion of reflexes, instincts, emotions, and capacities, and a sane appraisement of the measurement of the last by means of intelligence tests. In the second part the subjects dealt with are the laws of learning, effective and economical methods of learning, the permanence of modifications, the reciprocal effects of modification, fatigue, and the best methods of testing progress in school subjects.

In two respects the book is particularly noteworthy. The author considers conditioned reflexes in relation to education, though not, we think, with the adequacy the subject demands. It is, however, a considerable advance to have a few pages devoted to them in a book on educational principles and methods. Further, the whole treatment of the subject of the transfer of training—that is, the effects produced by training or modification in one department or subject upon other departments or progress in other subjects—is admirable and should be of great value. The wide claims for such effects which have usually been made and are still current deserve the careful examination which Professor Pinter gives them, and there can be little doubt that they must be seriously discounted. Especially may those who are responsible for the general education of pupils destined for the medical profession consider the position of the teaching of Latin, and of elementary science, in this regard. This is an important section of the book, and in it, as in other sections, the author bases his conclusions upon actual experience and scientifically conducted investigations, and expresses them with commendable clearness and moderation.

NOTES ON BOOKS.

WHEN, for the purposes of revision before entrance to examinations, the whole of medicine is condensed into a book of a size for the pocket, it is natural that the statements made should be dogmatic, short, and not always able to stand criticism of their meaning. Thus, in the new edition of *Aids to Medicine*,[6] by Dr. J. L. LIVINGSTONE, we find under glandular tuberculosis: "predisposing causes are enlarged tonsils and adenoids, carious teeth, etc." Is there any other basis than imagination for this statement? May not both the enlarged tonsils and the enlarged glands be due to the tubercle bacillus? Has anyone ever traced a tubercle bacillus through a carious tooth to a gland? We ask these heretical questions because it seems a pity that students are not trained in clear thinking. The tonsil may be suggested as the probable portal of entry for the bacillus to the gland; a tonsil enlarged from some other cause may possibly encourage entry; but the student should not be led dogmatically to associate enlarged tonsils and tuberculous glands. However, if more exact methods of description were used in *Aids to Medicine*, perhaps the book would no longer go into the pocket of the examinee.

Sir JAMES CRICHTON-BROWNE has celebrated his ninetieth year by gathering together into a little book, entitled *What the Doctor Thought*,[7] sundry reflections, amusing stories, and notes on distinguished people whom he has met. In it, as a reviewer recently stated in the *Morning Post*, "wisdom and the oldest jokes are to be found side by side." As an instance of the humour which pervades the stories we may take the account of a dinner at William de Morgan's house in Florence. The conversation turned on spiritualism, and all the guests related experiences except one lady, who, while helping herself to rissoles, declared that she would never believe in the supernatural unless some event, however trivial, which could not be explained rationally, happened to her. When the guests were leaving, and de Morgan was lifting the lady's cloak off a peg, an article shot out from the hood and hit her on the nose. De Morgan suggested that the article must have been a mouse with Alpine proclivities; but after a search it proved to be a cold rissole. "All possibilities of a practical joke were excluded," says Sir James. But he begins his next paragraph, dealing with a totally different matter: "I realized how painstaking de Morgan was in his work when, etc."! As a type of Sir James Crichton-Browne's reflections we may take his criticism of Lord Rosebery's statement that Dr. Johnson "was born scrofulous, half-blind, and with an hereditary melancholy not far removed from madness." Sir James's view is that the scrofula came from a cow with a tuberculous udder; the blindness from a dirty midwife; while the melancholy came *from* the doctor's alimentary canal, and might have been relieved with buttermilk.

[5] *Educational Psychology*. By Rudolf Pinter. London: Williams and Norgate, Ltd. 1930. (5½ × 8¼, pp. xiii + 378; 77 figures. 10s. 6d. net.)

[6] *Aids to Medicine*. By James L. Livingstone, M.D., M.R.C.P.Lond. Fourth edition. Students Aids Series. London: Baillière, Tindall and Cox. 1929. (Fcap. 8vo., pp. x + 414; 3 figures. 5s. net.)

[7] *What the Doctor Thought*. By Sir James Crichton-Browne, M.D., LL.D., F.R.S. London: E. Benn, Ltd. 1930. (Cr. 8vo, pp. 284. 7s. 6d. net.)

PREPARATIONS AND APPLIANCES.

A MODIFIED STEINMANN'S PIN.

DR. JAMES H. CYRIAX (orthopaedic house-surgeon, St. Thomas's Hospital) writes: A modification of Steinmann's pin, now in routine use in the orthopaedic wards of St. Thomas's Hospital, is illustrated below. It differs from the standard pattern only in that it has a screw thread at each end on to which fits a winged nut. When cords are attached to the pin the nut

prevents their slipping off, and even allows the cords to diverge from the line of the limb—often a great help in removing pressure from bony prominences distal to the point of insertion. The ordinary insertor-handle is used with a screwing motion while the thread is traversing the bone, and the time taken, therefore, is slightly increased. Nitrous oxide anaesthesia still suffices for adults, while, as previously, gentle extraction requires no anaesthetic. The pin is made by Messrs. Allen and Hanburys Ltd.

PREPARATIONS OF EPHEDRINE.

We have received from the British Drug Houses Ltd. samples of various preparations of ephedrine and its hydrochloride. This alkaloid is an exception among new drugs, for not only has it maintained its initial popularity, but it is, in addition, finding a steadily increasing range of employment; in particular, it is proving of real value in the relief of a number of common ailments. The wide range of utility of ephedrine is indicated by the fact that British Drug Houses Ltd. are issuing a variety of preparations—namely, tablets and elixir for oral administration, ampoules for hypodermic injection, inhalants, throat spray, and nasal jelly. The dose for oral administration is 1/2 to 2 grains, and the inhalants and nasal jelly contain 1 per cent. of ephedrine alkaloid.

The chief use of the drug is in the relief of asthma, but oral and local administration has also proved successful in the treatment of hay fever, and local administration is stated to produce considerable relief in the common cold. Oral administration is reported to benefit whooping-cough. In addition to these actions on the respiratory passages, the pressor action of the drug has been utilized for relief of shock.

INVESTIGATION OF ASTHMA.

REPORT BY ASTHMA RESEARCH COUNCIL.

In a leading article published in the *British Medical Journal* of June 21st the work of the Asthma Research Council, and of independent observers of this and allied conditions, was discussed. A disease of which the etiology remains obscure, asthma is under investigation from several aspects, and probably boasts as many forms of treatment as the common cold. Cases may be grouped as those which show asthma associated with allied conditions, such as migraine, hay fever, urticaria, eczema, and biliousness in childhood, and those in which asthmatic attacks appear to be the only symptom of ill-health. The findings of many workers, discussed in our recent article, point to alimentary toxaemia as a probable cause of asthma in some cases; achlorhydria and hypochlorhydria are common in asthmatic children, and flatulence is a frequent accompaniment of asthmatic attacks. The presence in the urine of a proteose to which the patient is extremely sensitive is possibly a secondary effect of incomplete protein digestion, and marked improvement, even recovery, has followed desensitization to this proteose. The omission of meat and potatoes from the diet usually reduces flatulence considerably and improves the asthma. The upper respiratory passages are under suspicion of harbouring a histamine-producing Gram-negative bacillus, which is responsible for asthmatic attacks in other cases. Sinusitis is common among asthmatics, but the opinion is held by some observers that it and the asthma are due to an unknown common cause. The group of cases in which a definite exciting factor, such as hen's feathers, can be found appears to be smaller than was at one time supposed.

In a report of progress of the Asthma Research Council, from October, 1927, when it originated, to May 31st, 1930,[1] the original programme of research is quoted. This was arranged to cover the whole field as far as possible without overlapping; that is to say, the asthma research centres were to attack the problem from different angles, following one line of inquiry in each case. The aspects under consideration were to include biochemical investigation, research into asthma as affecting children, an inquiry into the nature of sensitization, an examination of physical methods of treatment, the relationship of asthma to other respiratory diseases, observations on the effects of diet, an investigation of alleged cures, and an analysis of family histories of asthmatics.

Assistance has been received by the council both as a response to public appeals and by donation from the Halley Stewart Trust. Persons suffering from the disease have shown much anxiety to further the aims of the council, and have supplied records of their illness and of the treatment from which they derived most benefit. Some of the cures, following years of disablement, offer interesting lines of investigation; in others the importance of the psychological factor in asthma becomes apparent. One man recovered, after sixty years, by taking a mouthful of honey at bedtime; another described a cure following a dose of black treacle after the midday meal and two rhubarb pills at night. The council has wisely included in its programme the investigation of secret remedies and of the claims of homœopaths, osteopaths, nature curers, and others to treat asthma.

Work at Research Clinics.

At Guy's Hospital the clinic is under the charge of Dr. G. H. Oriel, and the staff at work on the asthma problem includes a biochemist, a radiologist, an oto-rhinologist, a pathologist and clinical pathologist, a physician, and a psychologist. One would say that with such co-operation it should be possible to view the disease as a whole. The clinic has attempted to collect statistics on the conditions predisposing to asthma, and to institute new lines of research and improved lines of treatment. From 213 patients who have passed through the centre it has been possible to draw some tentative inferences. For example, up to 14 years of age asthma is more common in boys than girls; after that age the incidence becomes almost even for the two sexes. Over 50 per cent. give a history of asthma or one of the allied conditions in other members of the family.

Investigations on desensitization to the urinary proteose, on digestive symptoms, on histamine-producing bacilli in the respiratory passages, and on sensitiveness to feathers, hair, and other animal substances are also being carried on; but results are as yet inconclusive. Among 55 patients suffering from asthma associated with other allergic conditions, and treated with glucose and ammonia to combat intestinal and liver disturbance, 27 had no attacks, 25 were improved (less than 50 per cent. of the original number of attacks), and 3 were unchanged (more than 50 per cent. of the original number of attacks). Among 21 treated by vaccines from organisms to which their skins were sensitive, 3 showed no attacks, 13 improvement, and 5 no change. Proteose injection has been tried for over three months on 22 asthmatics on whom other forms of treatment failed, and of these 6 have had no attacks, 12 were improved, and 4 unchanged. These figures give an interesting indication of the value of different lines of treatment.

At Great Ormond Street Dr. G. W. Bray is conducting investigations on children; 300 cases of asthma and allied disorders have been observed during the past year. The family history is taken in great detail, and a health visitor calls at the home and takes note of the district and of the internal and external conditions of the house. A radiograph is taken of the chest, blood specimens for analysis and grouping, and the child's diet and daily routine are considered in detail. Septic foci are removed, routine protein skin tests are made, and test meals given. The children attend educatory breathing classes, especially following the removal of tonsils and adenoids. A paper has already been published in this *Journal* (March 1st, 1930, p. 384) on the hereditary factor in asthma, as investigated in 200 cases at this clinic.

Physical methods of treatment are under examination at the London Clinic by Dr. Una Ledingham; these include inhalation therapy, ultra-violet ray therapy, the use of an automatic breathing appliance, and the application of carbon dioxide gas to the nose. Among 40 patients, ranging in age from 3½ to 70 years, 20 derived benefit from one or other form of treatment, 16 were unaffected, and 4 were made worse. The benefit varied from an hour or two of relief to comparative freedom in a few cases. It was found that the cases associated with bronchitis obtained the greatest relief, the remainder being for the most part unaffected. Ultra-violet light treatment appeared to give the highest percentage of improvement, inhalations a slightly smaller percentage, and the automatic breather the least.

At the Glasgow Research Clinic treatment has been confined to the removal of any nasal abnormality, and dieting according to Dr. Adams's diet sheet. Investigations are being carried out on the reaction of the blood and on eosinophilia in asthma by Dr. Marjorie Gillespie. At the Asthma Research Clinic at Leeds special attention has been directed to the treatment of nasal sepsis and to non-specific desensitization by the intravenous injection of peptone. The cases have been too few for any generalizations to be made as yet, but Dr. Henderson Moll finds that in his present series inheritance through the mother appears to be twice as common as through the father. At the Birmingham Clinic extensive trial has been made of intravenous peptone, and more recently of calcium chloride, following investigations on the ionized calcium in the blood. Voluntary workers at the Edinburgh Royal Infirmary have been collecting data for eight years.

Dr. Una Ledingham has made an interesting report on Continental asthma treatment centres. The treatment at these clinics is largely physical, depending on baths, inhalations, diathermy, and ultra-violet light; the results are good in some cases, but probably are temporary rather than permanent. Dr. Ludwig Hofbauer at Vienna, however, advises a method of re-education in breathing, which is simple, and appears to give good results.

Research is a tedious undertaking and cannot be hurried. Investigators have been hampered by lack of funds, but in spite of this a remarkable accumulation of knowledge has accrued.

[1] Copies of the report can be obtained gratis from the Secretary, Asthma Research Council, c.o. King's College, University of London, Strand, W.C.2.

BEIT MEMORIAL FELLOWSHIPS.

A SURVEY OF TWENTY YEARS.

We have received from Sir James K. Fowler, M.D., trustee and honorary secretary of the Beit Memorial Fellowships for Research in Medicine and Allied Sciences, a report of the last meeting of the trustees, together with details of the Fellows elected on that occasion. In view of the fact that the Beit Fellowships were founded in December, 1909, Sir James Fowler substitutes for his customary annual report a review of the work of the Trust during the first twenty years.

In 1909 there were in England possibly half a dozen studentships and scholarships which would enable a man without independent means to turn aside for a few years from the practice of his profession and devote himself to research in medicine; those of the Grocers' Company deserve mention. Sir Otto Beit's gift of £230,000 was of a magnitude that had no precedent in English medicine, and the annual income derived therefrom has ever since been applied to the endowment of men and women, and none of it has been spent upon the erection of buildings. In its first year the Trust created 10 new Fellowships, and within three years there were 30 Fellows engaged in medical research.

The Beit Fellowships are whole-time appointments, although teaching work in connexion with the allied branch of science is permitted, but private medical practice is forbidden. They are open to graduates in any faculty in a British university. The candidate selects the subject of his research, and in submitting it gives an account of his previous career and names referees who can give evidence of his fitness for the work.

At first the value of a Fellowship was £250 per annum, and the tenure three years, with a possible extension to a fourth year in cases where marked distinction had been shown. In 1922 the Fellowships were reorganized and designated junior (three years), fourth year, and senior (three years), thus providing for seven years of continuous research, a period regarded as adequate for a man of marked ability to give proof of his fitness for a higher post—for example, a professorship. The values of the Fellowships were then fixed at £350 per annum for junior Fellows; £400 for fourth-year Fellows; and £500 for senior Fellows. In 1927 the stipends were again revised and increased to £400, £500, and £700 respectively; at these values they have since remained.

In 1927 a Senior Fellowship, value £1,000 per annum for five years for research in tropical medicine, was created. To this Dr. Edward Hindle, whose research on yellow fever has been referred to in favourable terms in recent annual reports, was appointed. This research has already afforded an answer to several questions of great practical importance in connexion with yellow fever. It has been shown that: (1) A vaccine prepared from the organs of monkeys of a certain species infected with the virus of yellow fever will give protection to other animals of the same species. (2) That animals thus protected can withstand a dose of the virus a million times as great as that which is fatal to the unprotected. (3) That, although this vaccine prepared from monkeys is protective to monkeys, it has not yet proved possible by similar methods to immunize human beings. (4) That Europeans may suffer from a mild disease not clinically recognizable as yellow fever, and that subsequent examination of their blood may prove that all the accepted tests of immunity are present. In view of the dangers of this work the Trustees have decided not to continue the research under present conditions.

The total number of Fellows elected up to and including 1930 is 138. But for the war this number would have been greatly increased, as in 1914 all the Fellows resigned in order to undertake work of more immediate national importance, and during its continuance no new appointments were made. In 1919 all those who applied were reinstated.

Careers of Beit Fellows.

Excluding those whose appointments are of too recent date to justify their inclusion, it appears that the total number of Fellows elected up to the year 1925 was 101, of whom 79 were men and 22 women; of the men, 7 died at a relatively early age, but none of the women.

Considering first the careers of the 72 men, it appears that 4 have received the F.R.S. and 16 have been appointed to university professorships. Most of the remainder occupy whole-time posts for teaching, research, or scientific work, and have steadily continued the career upon which many entered when first elected to a Beit Fellowship. Of the 52 who held medical qualifications when appointed, 13 have passed into medical practice, consulting or otherwise, but the majority of these are continuing scientific work and are thus influencing the character of the art in which they are now engaged.

Of the 22 women a few have married, but all continued for many years the work of research, and many are still thus engaged. That they hold, or have held, such positions as members of the scientific staff of the Lister Institute, university lectureships in biochemistry, pathologist and bacteriologist to general hospitals and boards of health, head of a department in an institute for medical research, principal of a horticultural college, physicians to children's hospitals, and holders of Rockefeller Medical Fellowships, is sufficient proof of the value to them of their training when engaged in research as Beit Fellows and also of the services they were thus enabled subsequently to render to the community, both in this country and abroad.

As the separate problems upon which the Fellows have been engaged exceed 180 in number it is unlikely that any single individual is competent to form a trustworthy estimate of the effect which this work, covering so many and such diverse fields of knowledge, has had upon the advances made by these various sciences during the period in question. The honorary secretary mentions, however, by name two former Fellows, both of whom were appointed at the first election in 1909. "During the last fifteen years England has made no more conspicuous contributions to the knowledge that guides practical medicine than those which lie in the analysis of disorders of the heart by Sir Thomas Lewis, F.R.S., and in the experimental proof that rickets is due to vitamin deficiency by Professor Edward Mellanby, F.R.S."

Although the possession of an adequate stipend is the first necessity for one who proposes to devote his life to research, a place wherein his work can be carried on is hardly less so. The Beit Fellows have been singularly fortunate in this respect; they have been welcomed in many laboratories and institutes not only in this country but on the Continent and in America. In particular, many have enjoyed the hospitality of the Biochemical Laboratories at Cambridge under Sir F. Gowland Hopkins, and of the Lister Institute under Sir Charles Martin.

In the opinion of the Advisory Board the founder has every reason to be satisfied with the results obtained during the first twenty years of the life of the Trust which was born of his munificence in 1909.

Elections to Fellowships.

The following elections were made by the Trustees:

Senior Fellowship (value £700 per annum).—Richard James Lythgoe, M.A., M.B.

Fourth-year Fellowships (value £500 per annum).—(1) Philip Eggleton, M.Sc.; (2) Frank Robert Winton, M.A., M.D.

Junior Fellowships (value £400 per annum).—(1) Frederick Horace Smirk, M.D., M.R.C.P.; subject: the functional pathology and physiology of diuresis from a biochemical standpoint, and the functional pathology of plethoras, anaemias, and oedemas; (2) Gordon Ray Cameron, M.B., B.S., D.Sc.; subject: the histological identification of calcium salts in pathological deposits and inflammation in invertebrates; (3) John McMichael, M.B., Ch.B., M.R.C.P.Ed.; subject: the interrelationships of liver and splenic disease; disease of portal vessels and other vessel changes in liver disease; (4) Robert Percival Cook, B.Sc., Ph.D.; subject: bacterial metabolism and its relation to the specific action between host and bacterial parasite; (5) Norman Urquhart Meldrum, B.Sc.; subjects: the so-called reversible denaturation of haemoglobin, and the formation of sulphydryl groups in various types of protein denaturation; (6) David Reginald Piper Murray, B.A.; subject: a comparison of the two types of proteolytic enzymes characteristic of the tissues and organs and of the digestive tract; (7) George Norman Myers, M.B., B.S., M.Sc.; subject: the curative action of digitalis, its glucosides and allies, in general toxaemia and in conditions of shock; (8) Charles Amos Ashford, B.A.; subject: studies in (*a*) the metabolism of nervous tissue, and (*b*) the mode of action of vitamin D, with special reference to hypervitaminosis D.

All correspondence of candidates and Fellows should be addressed to Sir James K. Fowler, honorary secretary, Beit Fellowships for Medical Research, 35, Clarges Street, Piccadilly, W.1.

Nova et Vetera.

ANAESTHETICS IN MIDWIFERY.

J. Y. SIMPSON'S APOLOGIA.

A FEW months ago a fund was started for the purpose of providing anaesthetics to necessitous women in labour; in 1847, when Professor J. Y. Simpson gave the first anaesthetic to a woman in labour, the practice which the public is now asked to support was condemned on medical, ethical, and religious grounds. The contrast may serve to underline the impermanence of moral codes: it must not be taken to prove that we are better than our fathers. We do not, it is true, oppose the administration of anaesthetics in midwifery; but we might well ask ourselves how we would react to this practice if it were proposed for the first time to-day; or whether some of the innovations now opposed on moral grounds may not be adopted and regarded as blessings by our descendants. The arguments that Simpson had to answer have more than a historical interest: they have appeared with very little change in more recent controversies, and will doubtless find their supporters in the controversies of the future. They are, indeed, the stock-in-trade of those persons who, mistrusting innovations for no better reason than that they are new, seek to base their opposition on loftier grounds than a mere temperamental conservatism.

Fortunately, Simpson was a skilled dialectician and courageous enough to meet his opponents on their own ground: the doctors he refuted by arguments based on medical experience, the theologians out of the Scriptures. Some idea of his polemical methods may be gained from the following passages that appear under the heading "Notes of Professor Simpson's Lectures on Midwifery, 1854 to 1855," in the notebook of Dr. William Oxley, who was a student at Edinburgh, where he qualified in 1856:[1]

The religious objection is that it is a direct interference with the primal curse. But if we read the curse literally we must take the whole of the context. We shall then find that we are no more interfering with the primal curse in giving a woman chloroform in labour than by eating our food without sorrow; for it says in the curse to man, "in sorrow shalt thou eat of it all the days of thy life"; or by weeding our gardens, for it says further, "thorns and thistles shall bring it forth to thee"; or by inventing agricultural machines to save the sweat of man's brow. This argument against chloroform is chiefly used by old maids. In answer we can remind them that the primal curse ordains, "I will greatly multiply thy sorrows and thy conception"; and then ask them, Where is your conception; you've been breaking the primal curse?: "In sorrow thou shalt bring forth chidren," you have not any; and, "Thy desire shall be to thy husband." Madam, you haven't one.

Our best Hebrew scholars say that the word in this passage translated sorrow is everywhere else rendered "toil," and where pain is meant quite a different word is used. According to this argument all medical men are very great sinners for spending their lives in combating death, another consequence of the curse; and parsons are infinitely worse for striving to do away with sin.

The arguments based on ethics Professor Simpson dealt with as follows:

Moral objections are made on the ground that it is an unnatural interference with natural functions. The same argument holds good in regard to all the inventions and improvements which have removed us from the state in which we were placed by nature. If we take away every thing that is unnatural we shall speedily find ourselves stark naked, *in puris naturalibus*, without carriages, clothes, steamboats, railways, and all the comforts of life. Besides, the black women, who as nearly as possible are still in a natural condition, suffer little or no pain in labour; consequently, when we give a woman in labour chloroform to lull her pains, so far from putting her into an unnatural state we, on the contrary, restore her to a more normal condition.

As was only fitting, Simpson, in lecturing before medical students, devoted the greater part of his attention to the objections that had been brought forward by his professional brethren. The gist of his argument is shown in the following extracts:

All innovations, not only in medicine, but in other professions, have met with the strongest opposition. . . . It is said that the sexual feelings are excited by the use of chloroform, but this is not true; the same argument was used against potatoes, tea, and coffee. It was always considered by the older surgeons that pain was a great drawback to surgical operations, and that something to render patients insensible to pain was very desirable, as the suffering of a patient from a severe injury depresses the system, and is alone sufficient to destroy life, affecting the circulation in the same way as convulsions do, with fatal effect. . . . But no sooner have the anaesthetics, so long desired, been discovered, than the opponents to their use say that pain in surgical operations and in midwifery is desirable. According to them pain is a very nice thing; they think old things are better than new. Shortly after its discovery I stated in the Medico-Chirurgical Society that statistics alone could settle the question; these show that operations are not so fatal to the patient on the table when we save him from the pain by giving chloroform; and that it adds greatly to the chance of his life being saved after the operation. The same doctrine has been held with regard to midwifery; it is said that pain is an essential element in labour. It is no more essential than in surgery, and patients get on much better without it than with it.

In the practice of our profession we have two great duties to perform: to prevent death and suffering. When we forget either we forget half our profession. All other pains have their remedies, and we have as much right to relieve the pains of labour as other pains, particularly as labour pains are more severe than any of them: we are quite as much bound to relieve one as the other.

It is said that anaesthesia sometimes produces very serious symptoms: vomiting is one, but this is not serious and is very rarely seen under the use of anaesthetics. Laughing often comes on, but this is not more serious than in hysteria. Others aver that it produces convulsions, spasms, haemorrhage; but these complications, so far from being caused by it, are more generally treated with it successfully. Another objection is that it leaves mental and bodily diseases, such as pneumonia, bronchitis, pericarditis, fever, and puerperal diseases. It was supposed to produce bronchitis and pneumonia from these diseases being found in those patients who died after surgical operations after its use; but when patients die after operations, these are very common causes of death, whether anaesthetics have been used or not. The proportion of deaths from this cause is not so great after their use as without them. . . .

It has been said to cause pericarditis, because old adhesions have been found in the pericardium of people who have died under chloroform, but old adhesions could not form during the few minutes occupied in the inhalation. . . .

Feverishness is far less frequent after the use of chloroform than without it. It is said that it is apt to leave disease of the mind. I have seen its use followed by puerperal insanity, but only in women who have suffered from this disease before, when chloroform had not been used, and consequently it cannot be attributed to chloroform. I know of one case of a lady who had always had puerperal fever in previous labours in which chloroform was not used; in succeeding labours in which it was used she was quite free from it.

It has been asserted that it stops uterine action by producing paralysis. If given during the intervals between the pains it certainly will arrest the pains most effectually; but it will not do so if given during the pains, which is the proper time for giving it, and withdrawn during the intervals.

Another objection is that it occasionally destroys the life of the patient. It has occasionally produced death in surgery, but this accident has never happened in midwifery, because it is given in much smaller doses. On this ground we ought to reject all the drugs from the *Pharmacopoeia*. Opium alone produced 240 deaths in one year, even when medically employed. In about 400,000 cases chloroform has been used in Edinburgh, and out of these there has only been one death. Is there any drug in the *Pharmacopoeia* which has been used with less deleterious results? Many ordinary practices in common life should be abolished on the same ground; bathing, because people have been drowned; cold water, because people have died from drinking too much of it. Fire and water occasionally destroy life; should they be abolished? All medical practices, when not used properly, may cause death, and to give them up from their abuse and not from their use would be madness. Since 1847 chloroform has been used in almost all surgical operations performed in Edinburgh, perhaps not more than 5 per cent. being performed without it, and only one death has occurred under its use. During the same time four cases of sudden death on the operating table have occurred in which chloroform was not given. . . . If chloroform had been used in these cases the deaths would have been attributed to it.

[1] We are indebted to Dr. W. H. F. Oxley, son of William Oxley, for his kindness in allowing us to publish extracts from his father's notebook.

Many women look forward to their term of confinement with dread, which is entirely removed by these remedies. Some women, particularly when maniacal, will not allow an examination to be made; a difficulty which is removed by anaesthetics. . . . It alleviates the pain of natural and morbid labour, which it is as much a duty to do as to relieve the pain of toothache, lumbago, or any painful disease, all of which have their appropriate remedies, and are not so bad as that of labour. It is of use in facilitating manual and instrumental delivery; it assists us in turning, by arresting the action of the uterus, and in extracting retained placenta; it is the only remedy which arrests convulsions; it promotes recovery, which is much shorter and safer after its use; in consequence of which the nurses are set at liberty much sooner, a great objection on their part. It facilitates puerperal operations; abscess of the mamma, often multiple, can all be opened at once, and often disappears in a week instead of going on for months.

The modern historian engaged in bundling great men out of the pages of history, his favourite recreation, must pause a little uneasily when it comes to the turn of James Young Simpson. Would the general adoption of anaesthesia in midwifery have been delayed, he must ask himself, and for how long, if Simpson had been a man of less genius, less skilled in controversy, and with no stomach for a fight?

PUBLIC ADMINISTRATION AND THE MILK SUPPLY.

[FROM A CORRESPONDENT.]

THE wholesomeness and cleanliness of the milk supply of this country are of such evident importance that the chaotic state of the legislation now in force is greatly to be deplored. Probably the most glaring example of this chaos is to be found in the overlapping and uncertainty which exist, except in county boroughs, as to the respective duties of the county councils on the one hand and the sanitary authorities (borough and district councils) on the other. The adulteration of milk—for example, by the addition of water or skimmed milk or preservatives or colouring matters, or by the abstraction of fat—is the primary concern of the food and drugs authority, which, in the urban and rural districts, and many of the municipal boroughs, is the county council; but medical officers and sanitary inspectors of sanitary authorities may also undertake administrative duties in connexion with such adulteration if they wish. This, however, involves their authority in the obligation to defray the cost of their work without escaping its contribution to the cost of the county council's administration of the Food and Drugs (Adulteration) Act.

Whether or not the sale of dirty milk is an offence under that statute, and thus a matter with which a county council should concern itself at all, is a question on which authorities are not agreed. The county council of Middlesex, in a circular recently issued to all local authorities in the county, makes it clear that the officers of that council do not consider that it is within their province to attempt to apply the Food and Drugs (Adulteration) Act to dirty milk, and that in the county council's view local sanitary authorities should take an interest in the matter by virtue of their powers under the Public Health Acts and the Milk and Dairies Order of 1926.

Specially designated milk—that is, milk sold under such descriptions as Grade A tuberculin-tested, or Certified—is dealt with by the Milk and Dairies (Amendment) Act, 1922, and the Milk (Special Designations) Order, 1923, under which food and drugs authorities and local sanitary authorities have some powers definitely assigned to each, and others which they may exercise concurrently. An example of concurrent powers is to be found in connexion with the enforcement of Section 3 of the Act of 1922, which forbids the sale of specially designated milk otherwise than in accordance with the terms of a licence. Local sanitary authorities and county councils are alike empowered to set the law in motion against a distributor licensed by the local authority; and the Middlesex County Council now points out that although in two recent cases it instituted prosecutions it does not ordinarily take such action, but leaves administration in the hands of the local authority, which alone can revoke a distributor's licence. With regard to milk from tuberculous cows, the position is further complicated, by reason of the fact that the Milk and Dairies (Consolidation) Act of 1915 and the Milk and Dairies (Amendment) Act of 1922 (which were not originally intended by the Ministry of Health to be in force simultaneously) are both in fact operative; and while Section 5 of the former Act is to be enforced by county and county borough councils, Section 5 of the later Act is to be enforced by sanitary authorities; and each of these sections forbids the sale of milk from cows suffering from tuberculosis of the udder.

In these circumstances it is hardly to be wondered at that there is no great uniformity of practice among the various classes of local authority, or that some county councils arrange for the regular collection and routine examination for tubercle of samples of milk while others do not. When two authorities have concurrent powers there must always be a danger that each will leave the work to the other. Except in connexion with the veterinary inspection of milch-cows for tubercle, and Grade A milk sold by licensed producers (as distinct from mere distributors), it would seem that county councils have no clearly defined duties with regard to the sale of milk (or any article of food) which is not, from the point of view of cleanliness or bacterial content, wholesome and sanitary. But the annual reports of medical officers of sanitary districts do not, as a rule, provide much evidence that the sale of dirty milk or of specially designated milk has been closely supervised, and there is perhaps in some areas a tendency to regard the supervision of the milk supply as in all respects the province of the county council.

In Scotland, by the Local Government (Scotland) Act, 1929, all the duties of burghs with a population not exceeding 20,000, under the Food and Drugs and Milk and Dairies Acts have been transferred as from May 16th, 1930, to the county councils, which makes the administrative position in Scotland much simpler and clearer *than it* is in many parts of England and Wales, with regard both to milk and to other articles of food.

ROYAL MEDICAL BENEVOLENT FUND.

DURING the first six months of this year the committee has voted £5,208 in grants, in addition to the usual payments to the annuitants. These grants have been made to medical men who, through age or infirmities, have been unable to follow their profession and whose savings have been exhausted; to widows who have been left ill provided for, and even in some cases absolutely destitute; to widows left with the heavy responsibility of children to educate; and to other dependants of medical practitioners. All are genuine cases of distress and poverty, and deserving of the helping hand of a colleague, but more colleagues willing to give the help are wanted. Subscriptions and donations are needed. Cheques should be sent to the honorary treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, W.1.

At the last meeting of the committee £646 was voted to thirty-five applicants. The following are examples of the cases helped.

Widow, aged 43, of L.R.C.P. and S. Husband died in November, 1929, of tuberculosis contracted during the war. He gave up his town practice three years ago in order that he might work in the country. He was, however, unfit to do much work, and such practice as was secured is not now saleable. The widow has been left with £150 in the bank and no income, and a boy aged 10 to educate. Fund voted £26, and the committee has asked the Guild to assist widow to find employment. The boy will be a candidate for Epsom. The Fund will keep in touch with the case, will ask other charities to assist, and will give further help from time to time.

M.R.C.S., aged 57, owing to a stroke had to give up work and is too ill to attend to his own affairs. The wife applied for help towards the education of the two children. Private income £200; it is not expected that the practice will sell for more than £650. Boy, aged 15, has one more year at school to finish; fees £120. Girl, aged 12, at school, fees reduced to £30 a year. It is of the greatest importance that the boy should have his final year at school, after which he will be able to earn. Fund has agreed to pay £45 towards boy's school fees and will ask other charities to contribute towards the balance required.

Daughter, aged 61, of M.R.C.S. Has been employed in an office, but has been seriously ill for many weeks. Sick pay of 12s. a week ceased on May 8th. She has now only £30 a year from another charity. Medical report stated that it would be a long time before she could hope to resume work. This was a case of very pressing need and urgency. Voted £18, to be paid during the next six months, when the case would be further considered. In the meanwhile, medical comforts and service will be provided by the Guild.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, Tavistock House (North), Tavistock Square, W.C.1.

British Medical Journal.

SATURDAY, JULY 26TH, 1930.

SCIENCE AND METHOD.

SCIENCE in its chief aspect is a process of gaining knowledge, and as such it must not be confounded, as it so often is, with the process or processes of collecting facts. We are far from suggesting that collecting facts is not a laudable activity; it may provide science with material, but itself it is not science. The true scientific process is concerned with the arrangement and classification and interpretation of facts, with finding sequences and similarities, with formulating hypotheses, with discovering law: it is a creative act, a play of the intellect and imagination about facts, which transforms barren information into fertile knowledge. In this process, method—that is, the way in which facts are discovered—has an important but secondary place. It varies from science to science, and within each science according to the material that is being studied; and it may be said to have scientific value in so far as it is adapted to the material being studied and to the ends the scientist has in view. It is very important to realize the significance of this second criterion. The scientist does not, as it were, take a random sample of facts and say: Here is Nature; what secrets has she to reveal to me? He asks specific questions, and has to find the answers in known facts, or to look for the new facts which he believes will provide the answers. If his questions are about matters in the field of chemistry and physics he will probably seek out the relevant facts by the method of experiment; if about astronomy or geology it will depend on the precise nature of his questions whether experiment or large-scale observation will serve him best. It is worth bearing in mind, for it may correct the prevailing tendency to over-value the experimental method, that the scientific theory which has had a greater influence than any other in determining cultural development in the civilized world—the theory of evolution by natural selection—was built up by the method of observation, though the credit belongs not to the method, but to the genius of the man who applied it.

The experimental method has served science so well that there is, indeed, some excuse, though no rational basis, for the common view that science *is* experiment, and—an obvious corollary—that knowledge gained otherwise than by experiment is not scientific. Even in medicine, a subject which has never found a comfortable place among the sciences and prefers generally to proclaim itself an art based on science, there is a tendency to apply the word "scientific" only to facts elicited by laboratory methods or by the method of experiment, other words "empirical," for example, being reserved for the facts elicited by the method of observation. There is, it appears, caste among facts, and empirical facts are somehow of a humbler order than those named scientific. How a fact is classified which has been discovered independently by two opposed methods is not quite clear; but the question may serve to indicate the kind of difficulty that can arise when science and method are not clearly distinguished from each other. All confusion, we believe, could be avoided if two general principles were kept in view: first, that neither experiment nor observation is science, but that these methods, like all others, may be used scientifically or otherwise; secondly, that facts in themselves are neither scientific nor unscientific, but thinking makes them so.

These considerations bear closely on the thesis developed by Mr. Wilfred Trotter in his paper on observation and experiment and their use in the medical sciences. This paper, published at page 129, should be read in conjunction with Sir Thomas Lewis's observations on research in medicine (*British Medical Journal*, March 15th, p. 479), for in a very real sense the views of these distinguished workers are complementary to each other. The indolent mind rests on antitheses, on the easy assumption that if this is good then that must be bad; it must favour observation or experiment—it cannot favour both. Sir Thomas Lewis and Mr. Wilfred Trotter take, as might be expected, the far more difficult course of appraising the merits and limitations of both methods, and if ultimately one comes down more heavily on the side of experiment and the other on the side of observation it is only, we think, because they are not concerned with exactly the same material. Behind much of the controversy on the problems of method may be perceived this subjective factor—the all-too-human bias of the protagonists in favour of methods adapted to the kind of phenomena they themselves are engaged in studying. In every concrete instance brought forward to illustrate how this method or that has served to advance knowledge, it is evident that the method has been successful because it has been correctly applied to suitable material. In the sciences related closely to medicine the experimental method has its chief application in the fields of biochemistry, physiology, and bacteriology. But there is at least one field of medicine that can only be investigated satisfactorily by the method of observation: we refer to prognosis. It has been said that in medicine three things are important, and that the first and second and third of these is diagnosis. But diagnosis is not everywhere in good favour. It has been described as the application of labels, though even if it were no more than that we should think little the worse of it; the application of the right label is no small feat, and to those who know how to read it right the label is a shorthand description of the patient and of the disease process from which he is suffering. But no one can afford lightly to dismiss prognosis. Prognosis rests on a knowledge of the dynamism of disease, of the constitution of the individual, and of the nature of the environmental influences, pathogenic or otherwise, to which he is subjected. This is knowledge that can be gained only by the application of the method of observation to the study of individual patients.

Ultimately, it may be said, indeed, that all advance in the science and art of medicine can be gained only at the bedside or in the clinic. This does not mean that the physician is not indebted, and likely to go on being indebted, to knowledge gained by laboratory workers and by workers using experimental methods. Such knowledge helps to direct his observation into fruitful channels; it serves, moreover, to correct the errors into which he is liable to fall from too exclusive a dependence on the method of observation. But none of this knowledge is an advance in medicine until it has been studied in relation to real patients and put to the crucial test of everyday practice.

A NOTEWORTHY HEALTH SURVEY.

PHILADELPHIA, with its population of over two millions, is one of the largest cities in the United States, and its government and public medical arrangements are of universal interest. It is a city which has had distinguished health superintendents and is the seat of important medical teaching; but "politics" in the worse American sense have meant a vast amount of misgovernment and confused government in the past. There was need, therefore, for the comprehensive survey of its medical activities[1] to which Dr. Haven Emerson's leadership lends credence and authority. The inquiry was authorized by the mayor of the city, and all official documents were made available; it was backed by a Citizens' Survey Committee, and it was supported by a large number of representative subcommittees making studies of special problems within the general scope of the report. On the side of the Health Services, subcommittees considered the problems of cancer, of dental diseases, of heart diseases, of mental hygiene, orthopaedics, tuberculosis, maternity and child welfare, social hygiene, sanitation, public health education, industrial hygiene, health services, health examinations, and health areas; and on the side of Services for the Sick, separate subcommittees considered hospitals, dispensaries, social service, convalescence, the chronically sick, and home nurses. The total cost of the survey was about 70,000 dollars, or 3.4 cents per capita if distributed throughout the population; and there is little doubt that the report amply justifies this expenditure.

From an English standpoint, one wonders why, if as we believe is the case, the information in this volume is not available in the periodical reviews of the health superintendent. Annual stocktaking is as important in respect of the health problems of a city as is the treasurer's annual statement of its finances. But even in an English public health report much of the information as to the activities of general and special hospitals given in this volume would be lacking. With the extended local government in England, and the fusion of public health and Poor Law medical activities this should approach more nearly to realization; but the annual review will still be incomplete until it gives corresponding and comparable data for all non-official institutions of the sick, such as are embodied in some measure in this report on the Philadelphia survey. In the report is quoted a comparative statement for the year 1923 of per capita expenditure in cents in twelve American cities with population exceeding half a million. Philadelphia stands lowest in this list with 42 cents, Boston (87 cents) standing highest. In 1928 Philadelphia had increased its per capita expenditure to 52 cents.

In the space at disposal only a few points bearing on public health work can be noted. The chief obstacles to improvement are the inadequate allotments of funds for public health work, the imperfect co-ordination between different public health activities, and especially perhaps in the relation between voluntary and official public health work. A particular instance of the American tendency to have paper regulations which do not carry with them the weight of public opinion is seen in the notification of cases of venereal disease. These are fewer than the number of cases treated in the Philadelphia General Hospital. Delinquent cases not continuing treatment while in an infective condition are liable to have a placard labelled "venereal disease" printed in bold letters placed at the entrance to the patient's home; but, we are informed, "it is rarely necessary to placard a house."

Philadelphia, like all American cities, shows a rapid increase in accouchements in hospitals. In 1921 these formed 31.2 per cent. of total live births; in 1928 the proportion had increased to 51.3 per cent. Of the total live births in 1921, medical practitioners attended 55.0 per cent. of those delivered at home; in 1928 this had declined to 42.9 per cent., while the reduction in midwives' cases was from 13.8 to 5.9. Evidently the maternity practice of both doctors and midwives is being gradually transferred to institutions. Mortality of mothers from accidents and complications of pregnancy and parturition is high, being over 7 per 1,000 live births, as compared with about 4 to 5 in Great Britain. The infantile death rate varied in 1928 in different wards of the city from 276 to 41 per 1,000 births. It is nearly twice as high in the coloured as in the white population. What a vast scope for preventive effort is symbolized by these figures! And yet admirable work is being done, which if adequately co-ordinated and controlled might have double its present effect. Philadelphia is the home of the Henry Phipps Institute, the research work of which on tuberculosis is world-famed; but on the administrative side it is lamented that voluntary and official efforts overlap and function inadequately in outlying districts; and the methods of medical and social help are sadly divergent and unrelated. In regard to crippledom there is a like need for overhauling such activities as exist, and for their systematic extension; and the same remark may be made concerning the provision for home visiting of mothers and infants and of the sick, although by some societies good work is being done in these respects.

We need not pursue our illustrations. On the public health side the outstanding lesson of the survey is the need to "take stock," to bury the interests of individual societies and organizations in a spirit of co-operation, and to join forces with official agencies in a combined effort to secure the maximum benefit to the community from every dollar which the taxpayers and the charitable public would then, with increased willingness, be prepared to give. The hospital section of the survey embodies much valuable information; but here—and this feature is seen in large cities both in Europe and in America—there is very incomplete co-ordination between the work of different hospitals. General hospitals are burdened with chronic patients for whom their facilities are unsuited, and at an excessive expense. The homes for chronic cases are crowded, and have long waiting lists; and negroes particularly are neglected. The inadequacy of provision is shown by the following comparison. In hospitals intended for the chronic sick Boston had 2.3 beds per 1,000 of population, while Philadelphia had 0.48 bed; and in general hospitals there were 1.3 beds per 1,000 of population for chronic cases, as compared with 0.25 in Philadelphia.

We have extracted only a few items from a document of great value. The entire report is deserving of study, and is most instructive. We congratulate Dr. Haven Emerson and his colleagues on its successful production, and wish for it the practical results that should follow. These will probably come gradually. Their advent will be hastened if all agencies for the betterment of the people endeavour at once to join forces with those whose work is most nearly allied to them. A process begun in this spirit will soon extend. The need for municipal reform is obvious. A wealthy city—and a poor city none the less—cannot afford to

[1] *Philadelphia Hospital and Health Survey, 1929.* By Haven Emerson, M.D., Sol Pincus, C.E., and Anna C. Phillips. Philadelphia: Philadelphia Hospital and Health Survey Committee. 1930. (6 × 9, pp. xxii + 844.)

throw away human life and health in the manner which incomplete and unsatisfactory public health administration, especially on its medical side, implies. The citizens of Philadelphia are responsible in the final issue if they do not insist on wisely directed effort, on extended official work, and on efficient co-operation of this with all voluntary agencies and hospitals.

THE INTERNATIONAL CONTROL OF DRUGS OF ADDICTION.

THE British Government has just issued its report for 1929 to the League of Nations on the system of control of the commerce in dangerous drugs established in this country by the Acts of 1920–25, which were the outcome of the International Opium Convention signed at The Hague in 1912, and implemented by the Geneva Convention of 1925. The report claims that "drug addiction is not prevalent in this country," that the production and export of morphine and heroin have been reduced in comparison with the previous year, that raw opium for medicinal purposes is now mainly derived from India, and that the use of "prepared opium" is totally prohibited in Great Britain. Some 70 persons were in 1929 proceeded against for offences under the Dangerous Drugs Act; 34 were imprisoned, 26 fined, and a few were deported. Since 1928 cocaine has been manufactured, under licence, in this country by one firm, and 9,326 ounces were produced last year; 3,920 ounces were exported, and 4,329 ounces imported. The latter is some 5,000 ounces less than in 1928, and the home produce is increased by about the same amount. While illicit traffic in dangerous drugs in this country is said to be on a "very small scale," seizures of opium, morphine, heroin, and cocaine, in some cases of enormous amounts, are reported to the League of Nations from abroad. Returns from India, Egypt, British Colonies, and America indicate that there is little, if any, reduction in the illicit commerce. Cases are cited to show that Amoy in China is a centre for smuggling drugs into India and elsewhere. At the fifty-ninth Council of the League of Nations, held in May last, the British representative emphasized the widespread and dangerous character of the illicit traffic. He cited the case of a steamer that had recently left a port of a certain producing country carrying two thousand cases of opium entirely destined for illicit traffic. The Council endorsed the desire of the Tenth Assembly that steps should at last be taken to limit the production of dangerous drugs to medical and legitimate requirements. Such limitation was implied and approved by Article 9 of The Hague Opium Convention of 1912, and was reproduced in Article 5 of the Geneva Convention of 1925. It has, indeed, been argued that such limitation should apply only to the alkaloids derived from opium and to cocaine, together with preparations made from them, and not to raw opium nor, for a limited period, to the traffic in "prepared opium" in the Far East. The case cited above by the British representative would, however, appear to justify the contention that limitation to medical and legitimate purposes must be applied equally to the production of opium itself. The Advisory Committee at Geneva is to be reinforced by the addition of new members, and a fresh conference is to be assembled in December next, which will include representatives of consuming as well as of producing countries. Meanwhile it would appear that other countries which are parties to The Hague and Geneva Conventions would do well, not only to legislate on the lines of our Dangerous Drugs Acts, 1920–25, but also to see that such legislation is effectively administered.

FURUNCULOSIS IN FISH.

IN July, 1929, the Secretary of State for Scotland and the Minister of Agriculture and Fisheries appointed a committee, under the chairmanship of Dr. T. J. Mackie, professor of bacteriology at Edinburgh, to investigate furunculosis in fresh-water fish in Britain. The first interim report has just been published.[1] The disease is not a new one. It has been known in Europe for at least forty years, and the causative organism, *Bacillus salmonicida*, was identified in 1894. The condition did not attract attention in this country until 1911, however, but since then it has caused considerable alarm among those concerned with fresh-water fisheries, and it appears to be becoming more common. This fatal epizoötic disease of the Salmonidae was designated furunculosis by analogy with the human condition, in virtue of its characteristic "boil-like lesions." The causal organism is a short, aerobic, non-motile, non-sporing, Gram-negative bacillus which is not pathogenic for mammals and birds, but is highly virulent to frogs and many species of fresh-water fish. The organism can be readily isolated from the heart blood and kidneys; it causes boil-like lesions involving the skin and underlying muscle only in a minority of specimens. Healthy carriers appear to exist. Recent work has shown that the boil-like lesions are not analogous to human furuncles: they are areas of necrosis without any cellular reaction, and the "pus" is really only a mixture of muscle fibres, blood cells, and bacteria. The disease is essentially a septicaemia, and various organs may be involved; it is a serious economic menace to the salmon-fishing industry in Britain, and is still spreading to previously uninfected rivers. The committee inclines to the view that fish farms play an important part in this spread. It is recommended that no live fish belonging to the Salmonidae should be imported from abroad; and that all others, except eels for human consumption, should be admitted only under licence. Outbreaks at home should be made notifiable, and no fish should be transferred from an infected watershed without permission from the appropriate authority. There is still much to be learned about the disease, however; the experiments at present in progress are to be continued and extended both in the laboratory and in the field.

PREMATURE BURIAL.

ON June 19th Dr. Gardiol, Deputy for the Basses-Alpes, in conjunction with certain of his colleagues, deposited in the Bureau of the Chamber of Deputies in Paris the following draft resolution: "The Chamber invites the Government to regularize, in accordance with the findings of the Academy of Medicine and of the Academy of Sciences, the verification of death by a medico-scientific test, unequivocally indicative of death, in order that the number of burials of persons apparently dead may be reduced to the lowest possible minimum." Dr. Gardiol, in assuring his audience that the fear of being buried alive was well grounded, called to witness the many cases of premature burial on record. In particular he cited the case of Cardinal Donnat, Archbishop of Bordeaux, who, on the occasion of his ordination at Rome, passed into a state of apparent death and was wrapped in a shroud and carried to church, where he remained unconscious in his coffin till he was awakened by funereal chanting. Dr. Gardiol's resolution, which has been referred to the Commission on Hygiene, has, of course, proved excellent copy for the Parisian press. An editorial note in *Excelsior* points out that in 1803 Fourcroy, wishing to incorporate a provision in the *Code Civil* to the effect that the official called in to verify death should be

[1] Interim Report (March, 1930) of the Furunculosis Committee. Edinburgh: H.M. Stationery Office. 1930. 3s. 6d. net.

accompanied by a doctor, was assured that he had asked for the impossible, so small was the number of available doctors. That objection to-day has ceased to be valid, and it would almost seem as though Dr. Gardiol's proposal has a reasonable chance of being translated into French law. The whole question was dealt with very thoroughly in Germany in 1919 and 1920 in connexion with the case—discussed fully in the *Deutsche medizinische Wochenschrift* by Dr. Puppe, professor of forensic medicine in Königsberg—of a nurse who, attempting to commit suicide with 1.7 grams of morphine and 5 grams of veronal, was apparently dead for over seventeen hours. Puppe's survey included a reference to a Prussian law of 1775 dealing with pecuniary rewards for the revival of persons apparently dead. Successful operators received 30 marks, those who had striven in vain were awarded a consolation prize of 15 marks. Under certain conditions the prize was divided equally between all the operators. The legislators foresaw the possibility that the revival of the apparently dead might become organized as a large-scale industry, and accordingly applicants for the rewards had to prove that the object of their care had really been apparently dead, and that their efforts on his or her behalf had been sufficiently strenuous. As a further safeguard against the creation of a trade in resuscitation, cases of poisoning were excluded from the prize-winning class. Doctors were eligible for the reward, provided that they were not medical officers of prisons.

PREVENTION OF MILK FEVER.

ON July 12th (p. 69) we published a brief account of a study in the prevention of milk fever that has been carried out at the Royal (Dick) Veterinary College, Edinburgh, and the Animal Diseases Research Institute, Moredun. This work, we are informed by Professor J. Russell Greig, Director of the Institute, was conducted jointly by himself and Professor Henry Dryerre of the Departments of Physiology, University of Edinburgh, and the Royal (Dick) Veterinary College, and Dr. N. C. Wright, by the aid of grants received from the Development Commission and the Highland and Agricultural Society of Scotland, and forms part of a general investigation on milk fever which these workers are prosecuting in collaboration. As many of our readers will be aware, the physiological theory which forms the basis of these investigations was originated by Dryerre, who himself initiated the biochemical investigations and conducted them in their early stages. Dryerre and Greig contributed a paper on the etiology of milk fever to the *Veterinary Record* on September 8th, 1928, and the paper entitled "Studies in the prevention of milk fever," which formed the basis of our annotation, was contributed by Greig to the same periodical on April 5th, 1930.

THE B.C.G. DISASTER AT LÜBECK.

ON June 14th (p. 1103) we gave a brief account of the conclusions derived by Professor Bruno Lange from his investigations of the deaths that took place at Lübeck following the administration of B.C.G. cultures to 246 infants. In an article which appeared in the *Deutsche medizinische Wochenschrift* of May 30th (p. 937) Lange stated that he was convinced that the fatalities among the inoculated infants were due to the presence of virulent tubercle bacilli in the cultures. In a more recent report Lange states that the experiments and tests carried out by himself and his co-workers at the Robert Koch Institute, Berlin, have shown that the material, in the course of its preparation for inoculation purposes, became contaminated, and that the infants were actually inoculated with preparations containing virulent bacilli from some other source. He, together with the other investigators, condemns the head of the Lübeck Hospital for throwing away stocks of the cultures when their pathogenic properties became known, for by this action material indispensable for a complete investigation of the cause of the outbreak was destroyed. It will be recalled that the citizens of Lübeck appointed their own commission of inquiry; this commission has now issued a majority and a minority report, the former being more severe in its strictures on those responsible. According to the majority report the doctor whose duty it was to prepare the vaccine placed the B.C.G. cultures in an incubator containing virulent cultures of human tubercle bacilli, and failed, before the vaccine was administered, to satisfy himself by animal experiment that it was innocuous. The other doctors in Lübeck are censured for their failure to exercise proper supervision over the administration of the vaccine or to report the outbreak when its significance was realized. An article discussing Professor Lange's findings has been contributed by Professor Alberto Ascoli, director of the Tuberculous Vaccine Institute, Mailand, to the *Deutsche medizinische Wochenschrift* of July 11th (p. 1160).

MEDICAL PARIS A CENTURY AGO.

IN his interesting story of medical Paris a hundred years ago[1] Dr. Marcel Fosseyeux, secretary of the French Society of Medical History, gives many personal details about the best-known contemporary medical men, who numbered some 870 for a population round about 700,000 with 20,000 births and deaths annually. The reader is conducted through Paris, shown where the medical notabilities lived, and told something about their lives and characteristics. Thus Broussais lived at 71, Rue Saint-Jacques, and waged war in the medical press of the day on the opponents of his physiological doctrine; he bled and depleted his patients freely, and in 1824 had himself bled to 20 oz. on six occasions, and 50 to 60 leeches applied fifteen times within eighteen days for a digestive disorder. His influence must have been powerful, for between 1824 and 1827 the number of leeches imported into France increased from 300,000 to the extraordinary figure of 33 millions. Dupuytren, who lived at 4, Place du Louvre on the other side of the Seine, was the dominant surgeon of his time, and met with a haughty silence Richerand's *Histoire des progrès récents de la chirurgie*, which was directed against him. There is also an attractive account of the Parisian medical societies and journals of the period; one of the latter founded by Bichat in 1798 had the intriguing title of "La Société médicale d'émulation," and by 1830 had published twenty-nine volumes of *mémoires* and *bulletins*.

THE OSLER CLUB.

THE Osler Club celebrated, on July 12th, at its headquarters in London, the eighty-first anniversary of the birthday of Sir William Osler. Professor Harvey Cushing, having been welcomed as a friend of the club and as orator, gave an informal address, full of the charm and the whimsicality of his subject. He told of the early Weston days, of Father Johnson and of James Bovell, and of how under their influence Osler turned from the Church to Medicine. Professor Cushing, in his address, revealed some of the secrets of the writing of "The Life," and much else besides, to the delight of his audience. Dr. Arnold Klebs took up the tale, to be followed by Sir Arthur Keith. Between the three, with occasional help from Sir D'Arcy Power, Dr. Henry S. Wellcome, and Mr. Philip Franklin, a lively discussion continued, until Mr. W. R. Bett, foreign secretary of the club, remembered that it was long past Osler's bedtime, and with a graceful tribute to the orator and to the influence of "The Life" upon the growing generations of medical men, brought the meeting to a happy conclusion. Before the oration the club entertained Professor Harvey Cushing to dinner at the Langham Hotel.

[1] *Il y a cent ans: Paris médical en 1830.* Par Marcel Fosseyeux. Paris: Librairie le François. 1930. (5½ × 7½, pp. 102; 7 figures. 10 fr.)

THE HALF-YEARLY INDEXES.

THE usual half-yearly indexes to the *Journal* and to the *Supplement* and *Epitome* have been printed; they will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who desires to have one or all of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this desire.

THE Secretary of State for Scotland has appointed Mr. A. Froude, I.S.O., to be Registrar-General for Scotland, in succession to Dr. James Craufurd Dunlop, whose retirement under the age limit will take effect on September 3rd.

A CONFERENCE of representatives of local authorities, convened by the Board of Control, was held on July 22nd and 23rd to discuss action to be taken under the Mental Treatment Act, 1930, which has just received the Royal Assent. The subjects of discussion included provision of out-patient clinics, treatment of voluntary patients, and treatment of temporary patients under the new Act. On the afternoon of Wednesday, July 23rd, the Minister of Health addressed the Conference.

THE ANNUAL REPRESENTATIVE MEETING.

Friday, July 18th.

THE Representative Body, for the first time in its history, met this year in the House of the Association, and seemed to appreciate the comfort of its surroundings. Our full report of the proceedings on Friday and Saturday will be found in the *Supplement*. The session opened with an expression of sincere regret for the absence of the Deputy Chairman, Dr. Arnold Lyndon, whose health did not allow him to seek re-election to that office, and for the illness of Dr. John Stevens. In moving the election of the President for 1931–32 Dr. Brackenbury drew attention to the fact that Dr. W. G. Willoughby will be the first medical officer of health to hold that office, and that he will do so at a particularly appropriate point in professional development. The election of Sir Ewen Maclean and Dr. A. D. Blackader of the Canadian Medical Association as Vice-Presidents of the Association was carried with acclamation, and the representatives, after a tribute to the memory of Sir Jenner Verrall and Mr. W. E. Hempson, settled down to the main business of the day. Discussion on the report of the activities of the Association Professionnelle Internationale des Médecins served to illustrate anew the vitality and breadth of interest of the Warrington Division, and showed very general concurrence by the Representative Body in the Medical Secretary's opinion of the efficacy of legal sanctions for the suppression of unqualified practice. The financial statement, made with the Treasurer's customary skill, elicited a pertinent contribution from a new member, Mr. Pearce Gould. Manchester's motion on the control of expenditure presumably owed its acceptance to the vigour and conviction of Dr. D'Ewart's presentation of what he himself described as "a reasonably pious resolution designed to strengthen the position of the Representative Body," in the realm of finance. Discussion on the Organization Report was chiefly noteworthy for the care with which the details of a scheme for according formal recognition of special service rendered by members were debated, commended, and amended up to the point of final adoption; when, suddenly realizing the implications of this attempt to give outward form to a generous sentiment, the representatives turned with relief to the way of escape offered by passing to the next business. For the rest, the meeting refused to accept the Holland Division's appeal for a simpler definition of a "decision of the Association," and resolved to shoulder its own responsibilities, ignoring the dangerous allures of the referendum. This decision it forthwith put into practice in what was, as the Chairman of the Insurance Acts Committee pointed out, a matter of fundamental importance. The declaration that medical benefit under the Insurance Acts should be extended to dependants of insured persons was strengthened rather than weakened by the addition of a clause safeguarding the economic conditions essential to the provision of a sound service, which differed but little from an amendment framed by Warrington. The balance of voting seemed to justify the attitude of confidence in the future, based on sane appreciation of existing conditions, which distinguished Dr. Dain's opening speech. The Science Report gave representatives an opportunity to express their appreciation of the services rendered by individual members in connexion with the Association's work for the advancement of medical science, and of the high qualities of the work submitted by candidates for grants and prizes. The discussion on the *Journal* showed a healthy desire for improvement, coupled with appreciation of the manner in which the difficulties of a transition period have been met. Friday's session ended with the introduction by Dr. Langdon-Down of a report on the ethics of remuneration and reward for research and invention, and a criticism of that report by Dr. Graham Little.

Saturday, July 19th.

On Saturday the Representative Body turned to consider the two chief items of its agenda—the revised Hospital Policy and the Proposals for a General Medical Service. The discussion on the former hardly lends itself to summary comment. The basic principles at issue had, as pointed out by Sir Richard Luce in introducing the report, already been settled. What remained for discussion was the suggestions made for their application in the complex and rapidly shifting field of hospital practice. The problem before the Hospitals Committee had been to be of practical use without at any point hindering legitimate development or embarrassing those who are engaged throughout the country in the delicate task of readjustment to widely differing conditions. On the whole, the debate, while it emphasized the bewildering variety of local and individual experience, resulted in endorsement of the methods formulated by the committee. It certainly showed a lively appreciation of the importance of the points at issue. Indeed, at one time it became necessary for the Chairman to read a proposed amendment not only to the main meeting in the body of the hall, but also to a minor meeting of contributors to the discussion gathered on the platform behind the chair. The only point on which the recommendation of the Council was definitely rejected was the extension of the income limit for hospital contributory schemes. This was negatived on the motion of Bristol and Liverpool under the apprehension that it would involve an encroachment upon the sphere of private consulting practice. For the rest, what may now, as a result of the opening discussion on definitions, safely be termed the "council hospital" policy, was made more comprehensive by the addition of an alternative method of staffing, substantially in the terms proposed by Brighton. One appendix, that concerning standards for hospitals of 100 and more beds, was referred back as not dealing adequately with the needs of council hospitals under the new conditions. The motion from Sunderland, designed to safeguard more effectively the free choice of medical attendance by private patients in all classes of institution, was referred to the Council, on the personal undertaking

of the Chairman of Council to consider the best method of providing for the desired result, and a few minor drafting improvements were adopted throughout the policy. Rejection of the amendments by Torquay and Wakefield designed to secure further discussion by the profession before adoption of the policy as a whole marked the appreciation by the Representative Body of the ample opportunities for discussion already offered at every stage of the development of the policy and the urgency of its immediate adoption as a working instrument. The debate was marked throughout by the agreement of every section as to the need for providing at all points for the access of the general practitioner to hospital practice, and a great measure of agreement upon the methods by which this might best be secured. Dr. Bone's introduction of the Proposals for a General Medical Service will repay study as a model of effective exposition, indicating without recapitulation of its contents the scope and aim of the report and the most profitable lines for discussion. His tribute to Dr. Fothergill as the instigator of the proposals and to Dr. Cox as responsible for the formulation of the committee's findings was the more impressive because, in the nature of things, such personal acknowledgements must be rare. At the outset the rejection of West Suffolk's suggestion that the proposals should be accepted merely as a defence against a whole-time State medical service cleared the way for their discussion as a constructive contribution to the service of the community.

Monday, July 21st.

The greater part of Monday was spent in completing consideration of the Proposals for a General Medical Service, discussion turning for the most part on points of detail. As on Saturday, the amendments adopted in no way modified the general lines of the report. The addition, on the motion of Brighton and Chichester and Worthing, of provision for direct access of local medical advisory committees to local health authorities seemed not unacceptable to medical officers of health. The long debate on the inclusion of the estimates of cost in para. 72 of the proposals was directed merely to the advisability of quoting official estimates, not to the validity of any estimates put forward on behalf of the Association. The repudiation of a depressing picture of the rural practitioner sketched by Dr. Murray of Banff may have been due in part to the appearance of well-being presented by other rural practitioners who spoke on the motion as well as to their more cheerful estimate of prevailing conditions. A curious position arose from the absent-minded acceptance of an amendment by Kensington, in form a verbal adjustment of the summary of proposals, in essence a negation of the whole basis of earlier decisions of the meeting. The difficulty was solved by an adroit and timely suggestion on the part of Dr. Middleton Martin. Most of the debate on the motions by which it was sought to postpone the effective utilization of the proposals pending further reference to the profession might have been avoided if representatives had kept in mind the real nature of the proposals as explained at the outset by Dr. Bone, and not been misled by the frequent adoption by speakers of the shorter term "scheme," with its suggestion of a cut-and-dried plan of action. The amendments in question were rejected as soon as this point was effectively recalled. On the report of the Dominions Committee the Representative Body enjoyed, as usual, the opportunity of hearing the Oversea representatives. This occasion was marked by the appreciative account given by Sir Ewen Maclean of his recent tour and a description by Dr. A. Robertson of conditions in Victoria, which emphasized once again the similarity of professional problems in all parts of the world. The handling of the motion from Bombay was by no means an easy matter. Both sides displayed admirable restraint and discretion, and if comment were needed on this item it was supplied by Colonel Newcomb's description of the work of the Association in India as one of promoting good will and mutual understanding in very difficult times. Discussion of the Medico-Political Report was almost wholly confined to the determination of the fees to be asked for medical practitioners called in on the advice of midwives. The issue lay between the conviction of the Council as to the maximum fee likely to be obtained and the desire of representatives for payment commensurate with the service actually rendered. Dr. Langdon-Down and Dr. Parry's amendment to the Council's recommendation about the advice to be given on birth control at maternity and child welfare clinics was generally accepted by the meeting and by the Chairman of the Medico-Political Committee as an improvement on the original wording, and brought to a satisfactory end the discussion of a topic beset with difficulties. Discussion of the report on medical benevolence had unfortunately to start from much the same point as it has done since the Association first definitely assumed responsibility for taking a hand in this matter. It was relieved by the highly creditable record of activities undertaken by Portsmouth, and marked by an appeal from Dr. Walker, which at least deserves a more effective response from the Association as a whole than has yet been forthcoming.

All present at the Representative Meeting were greatly concerned to hear that Dr. J. R. Drever, the Scottish Medical Secretary, who was on the platform throughout the opening day, had been taken seriously ill on Saturday, and is now in University College Hospital. The representatives, before separating on Tuesday afternoon, authorized the Chairman to send a message of sympathy and good wishes to Dr. Drever.

The Oversea Luncheon.

ON Friday, July 18th, representatives of the Oversea Branches and Divisions visiting London for the Annual Representative Meeting were entertained to lunch at the British Medical Association's House, Tavistock Square, by the officers of the Association, the Chairman of the Organization Committee, and the Chairman of the Dominions, India, Colonies, and Dependencies Committee. The other guests included Mr. Oswald Hempson and the senior officials of the Association. The chair was taken by Dr. C. O. Hawthorne, who, in a short speech, said that this "mid-day relief between sessions" enabled those with common interests and loyalties to make each other's acquaintance. This was the first time that those at headquarters had been able to entertain oversea guests in the Association's home. He wished not only to extend a very cordial welcome to the guests, but to express appreciation of their work and to acknowledge the generous hospitality always offered to official visitors from headquarters on their tours abroad. The Association at home was always very ready to receive suggestions from oversea delegates and to hear their experiences. It was a great source of satisfaction that the obstacles standing in the way of a post-graduate centre in London had now been removed, and that in the plans for the organization of the hospital and school the Association was taking its part. Dr. Hawthorne coupled with the toast of "The Guests" the names of Dr. Napier and Colonel Newcomb, who each expressed thanks for the warmth of their reception by the parent body and its officials. Dr. Hughes and Dr. Robertson also spoke. The names and constituencies of the oversea guests present are: Dr. F. Napier, Southern Transvaal; Lieut.-Colonel Clive Newcomb, South India and Madras; Dr. D'Arcy Moir, New Zealand; Dr. H. Wiltshire, Nyasaland; Dr. Hedley J. Brown, Queensland; Dr. A. F. Hughes, Grenada; Dr. Allen Robertson, Victoria; Dr. G. S. Woodman, Mesopotamia.

CONFERENCE OF THE BRITISH SOCIAL HYGIENE COUNCIL.

THE question how to co-ordinate maternity and child welfare services with the efforts now being made to combat the spread of venereal disease was one of the topics discussed by the British Social Hygiene Council at an imperial conference held on July 14th at Westminster.

The Right Hon. L. S. AMERY, M.P., who was in the chair, said that this question was of great importance, for in the ante-natal treatment of expectant mothers lay the hope of improving the health of future generations. Experience showed that the percentage of healthy children born might be enormously increased by ante-natal treatment. The real remedy for venereal disease was not licensed houses and periodical examination, but the effective provision of treatment. In the Dominions the willing support of the native women could best be secured through the agency of Europeans, and the Colonial Office might well encourage the wives of colonial civil servants and officials to get into really human touch with the native population by learning the native languages.

Dr. FLORA LLOYD, assistant medical officer of health for Swansea, mentioned that the women's venereal disease centre in Swansea had been established in the same premises as the ante-natal and post-natal clinics in order to avoid suspicion in the minds of women that they were being treated for venereal infection; there were, however, different rooms and different entrances. If patients asked a direct question about the treatment they were informed about their condition. Only part-time nurses were employed, and they were engaged also in school and health visiting work. The chief source from which patients reached the centre was from the ante-natal clinic. The child population was under close medical scrutiny, and all suspicious cases were referred to the clinic for investigation. A feature of the work of the Swansea clinic was the effective following up of cases. The total number of attendances for 1929 was 10,548. A marked improvement had taken place in the general health and in the local conditions. It was not thought in Swansea that the problem of discovering and treating venereal disease in mothers and children had been fully solved. The net was of very coarse mesh, and probably caught only a small proportion of cases. Co-ordination with the maternity and child welfare and school medical services was fairly complete, but there was no linking with the venereal diseases department of the Swansea Hospital, and with general practitioners and the midwives. The confidential nature of the treatment was a great stumbling-block. If the clinics became an integral part of the public health clinic services she believed that the work of detecting disease would become much more complete.

Dr. SOCRATES NORONHA of Bombay announced that there a definite solution of the difficulty had been reached. There was an infant welfare scheme in Bombay with ten centres, each with special women officials, and including one or two venereal disease specialists, who worked at two special sessions per week. All the suspected cases of venereal disease were referred to these special sessions.

Mr. E. B. TURNER said that those who had anything to do with the appointment of workers at these centres should bear in mind that the practitioners chosen should have a very definite knowledge of venereal disease. Many newly qualified men were appointed to the centres whose knowledge in that respect was very slight. When he was a member of the General Medical Council some years ago he had tried to arrange for venereal disease to be made part of the educational curriculum. He looked through all the examination papers of every qualifying body, and, of the huge number of questions, only three dealt with venereal disease.

Emigration and the Dominions.

Several delegates addressed the conference on the subject of the treatment and prevention of venereal disease among migrants to the Dominions.

Dr. MCCALLUM, chief medical officer of Australia House, said that the population of Australia was increasing by 2 per cent. every year, mainly in the transference of British folk, and relatively small quotas from Continental countries. The Immigration Act definitely barred any person suffering from a serious transmissible disease. Before assistance was granted to migrants each of them had to pass a special interviewing officer, and each report was examined at Australia House. Medical references were checked over before approval was given. Ships' officers made it difficult, if a case of venereal disease occurred on board, for the infected person to escape a visit to the doctor, who was in duty bound to report the case. On arrival at Australia every passenger had to pass a doctor of the Commonwealth Department of Health. Only the best human material could adjust itself to the new environment.

Miss RUBY RICH, late of the Racial Hygiene Association of New South Wales, urged the provision of suitable literature and the exhibition of films on emigration boats, to impress on the emigrant the need for a high moral standard. Films shown to adults should not be the same as those shown to younger people; they could deal with the biological, statistical, and practical human aspects of venereal disease. The very worst time, she thought, to commence sex education was puberty, when the emotions were at high pitch.

Dr. MYERS of New Zealand remarked that that country desired to have a type of settler who would be mentally, physically, and morally fit, and a patriotic and worthy citizen of the new country. They needed people of the highest possible qualifications. He believed that films and books could do great harm if not properly suited to the people who were to see them.

Biological Training in Schools.

Professor JULIAN HUXLEY, who delivered an address on biology in education, said that this subject was of paramount importance for residents in agricultural countries, especially if conditions were rendered more difficult by climatic causes or insect infestation. He commented on the increase in mental defectives during the last twenty years. Cinematograph films might be employed more extensively, and there should be a certain amount of nature study in the educational programme of every child in the British Empire. An exhibition was subsequently given of films.

CONFERENCE DINNER.

In connexion with the Conference of the British Social Hygiene Council a dinner was held at the Café Royal on July 15th, with Sir BASIL BLACKETT, the president of the Council, presiding; the guests included a number of colonial administrators and officials of the Colonial Office.

Proposing the toast of "Health and Empire," Mr. AMERY said that the conception of health having anything to do with Government was an almost startling novelty in this country only fifty years ago, but it was now being accepted in every outpost of the Empire. He reminded the gathering how enormous in extent and population was the tropical empire of Britain; nowhere in the world did problems of health have the urgency which they had in the Tropics. In the tropical world, due to causes only in small part inherent to the Tropics, and much more to neglect in the past and in the present, there were insidious enemies lying in wait to destroy both body and mind. Mr. Amery went on to refer to the possibilities of the Colonial Development Fund, which he had had a share in inaugurating, in the way of assisting medical men practising in the colonies to take advantage of opportunities for post-graduate study, and also of sending out experienced specialists to confer with local administrators on health problems. The British Social Hygiene Council, which was most willing to co-operate with any Colonial Government, was specially concerned to combat a group of diseases (venereal) which were preventable—that, indeed, was the starting-point of its work—in a sense in which the customary diseases of the Tropics were not. The toast was responded to by Sir RONALD STORRS, Governor of Cyprus, who referred in grateful terms to the results of a commission from the British Social Hygiene Council which visited Cyprus in 1926 on its way further east, and left its mark, he added, on the modest health budget of the colony. A local hygiene council had since been founded, and there were five venereal disease clinics.

Mrs. NEVILLE ROLFE, secretary-general to the Council, proposed the health of "The Guests," and stressed the service which the wives of colonial administrators might do in the instruction of women in the countries to which they went. Brief replies were made by the Right Hon. SRINIVASA SASTRI and Lady BADDELEY, wife of the Chief Secretary to the Government of Nigeria. In response to the toast of his health, which was proposed by Dr. DRUMMOND SHIELS, M.P., Sir BASIL BLACKETT said that it had been a great pleasure to the Council

to entertain so many representatives from overseas. He was afraid that in the course of the last generation some of the British self-confidence in the mission of Britain to the world at large had evaporated. Nevertheless, he thought it would be a misfortune if the idea weakened that there were British traditions and British ways of living which were well worth bringing to other peoples; among the ideas which Britain could impart none was more important than the teaching of modern science with regard to preventable disease.

England and Wales.

New Public Health (Tuberculosis) Regulations.

THE Minister of Health has issued further regulations[1] with regard to tuberculosis, amending those of 1912, 1921, and 1924; they will come into operation on January 1st, 1931, and have been modified to correspond with changes involved by the Local Government Act of 1929. They provide that henceforth notifications by school medical inspectors shall be made upon the form prescribed for other primary notifications. The wording of Article 5 of the regulations of 1912 has been amended in order to make it clear that previous notification in another sanitary district of the same county does not relieve the medical practitioner from his own duty in this respect, unless he has reasonable grounds to believe that the case has already been notified to the medical officer of health of his own sanitary district. With regard to the weekly notifications by medical officers of Poor Law institutions and sanatoriums a change has been made in the form to make it clear that the responsibility for the original diagnosis in such cases does not rest upon the medical officer of the institution. The requirement that a notification transmitted to a medical officer of health shall be enclosed in a sealed envelope is considered to have been complied with if it is folded and sealed in such a way that, during its transmission, the particulars of the notification cannot be observed. A paragraph has been added to make it clear that notification under these regulations is not required in cases where such notification is covered by Section 5 (*b*) of the Local Government Act (Emergency Provisions) Act, 1916. It is added that the notification register to be kept by the medical officer of health need not take the form of a book; the information may preferably be kept in a card system, and should constitute as far as practicable a record of those suffering from the disease. The Minister emphasizes the point that, while the responsibility for the conduct of schemes for the institutional treatment of tuberculosis rests with the councils of counties and county boroughs, it does not affect the local functions of district councils as regards the prevention of infection. These duties and powers of sanitary authorities in connexion with tuberculosis are defined in two articles of the new regulations, and the necessity of their being exercized is urged. It is mentioned that the available information does not suggest that any serious proportion of the unnotified cases of tuberculosis can be ascribed to deliberate neglect on the part of medical practitioners by whom the disease has been diagnosed. The two chief causes of delayed notification appear to be that the disease is not recognized by the practitioner in attendance, and that the tuberculous person does not consult a practitioner until his condition is already far advanced. From this it results that in some areas a considerable proportion of cases are not notified before death, and that a still larger proportion are only notified during the last six months of life. Medical officers of health are asked to use any opportunity which arises to remind general practitioners of the special facilities for diagnosis which are provided by the dispensaries of the county or the county borough council. Further development of the educational side of anti-tuberculosis work should also be pressed; the Minister believes that there has been insufficient organized effort in some areas to issue simple statements about tuberculosis and the public facilities for its diagnosis and treatment. The Ministry of Health has issued a circular (No. 1107) to county councils and local sanitary authorities commenting on the implications of these regulations.

[1] Statutory Rules and Orders, 1930, No. 572. H.M. Stationery Office. Price 3d.

Radium Treatment of Menorrhagia.

Interesting conclusions about the value of radium treatment in cases of menorrhagia, based on experience gained at University College Hospital during the period 1921 to 1928 inclusive, appear in the Harker Smith Registrar's Report for 1929. In this condition the aim of radium treatment is to relieve the symptom rather than to cure the underlying disease, and in the record of cases included in the report the criterion of cure is the production of amenorrhoea or of periods not accompanied by excessive loss of blood. In a few cases the patient denies having received any benefit from the treatment, in spite of the fact that this criterion of cure has been fulfilled; but such an attitude is usually due to severe menopausal symptoms. In trying to gauge the severity and duration of menopausal symptoms after radium treatment the hospital authorities aim at keeping in touch with each patient for a minimum period of five years, the three-year period adopted in the past having proved insufficient, especially in following up younger patients. Some patients have started menstruating after periods of amenorrhoea varying up to four years. As far as is known, only two of the patients have become pregnant after radium treatment; one gave birth at full term to a male child with double inguinal hernia, the other miscarried. These experiences and evidence derived from animal experiment suggest that the children of parents thus irradiated will be physically and mentally abnormal, and there are serious grounds for the view that young patients should not be treated by irradiation unless they are given doses large enough to produce sterility. An analysis of the results of treatment in patients with menorrhagia due to no discoverable organic lesion brings out the following facts about dosage: in no patient over 45 has a dose of 1,800 milligram hours failed to produce amenorrhoea; a dose of 1,500 milligram hours failed in the case of one patient over 45, but many cases have been cured with this and smaller doses, even as low as 600 milligram hours; in no patient in the age group 41 to 45 has a dose of 1,800 milligram hours failed, though 1,500 milligram hours was ineffective in two patients of this group; in one patient aged 40 a dose of 1,800 milligram hours failed to produce cure. It appears, therefore, that the doses required to produce amenorrhoea in the age groups from 41 onwards are as follows: 41 to 45, 1,800 to 2,000 milligram hours; over 45, 1,500 to 1,800 milligram hours. In younger patients too few cases have been treated to warrant definite conclusions, but it appears that the necessary dose in the age period 36 to 40 is 2,000 milligram hours or over, and in younger patients it is higher still. All these doses are of course inadequate in cases due to organic disease; thus, two cases associated with fibroids in patients aged 46 and 57 respectively were not cured with a dose of 2,250 milligram hours each, and in cases treated with doses of under 2,000 milligram hours there occurred a larger proportion of failures than in the group of essential menorrhagia.

Metropolitan Refuse Dumps.

Miss Susan Lawrence, Parliamentary Secretary to the Ministry of Health, received, on July 17th, a deputation representing the Essex riverside local authorities affected by the dumping of refuse from the Greater London area. Mr. H. T. Muggeridge, M.P., introducing the deputation, stressed the great danger to the health of rapidly growing communities from the present practice of forming huge, unsightly, and insanitary dumps in the areas bordering on London. An interparty committee of members of Parliament had been formed to press for immediate action. This committee had passed a resolution welcoming the recommendation of the Departmental Committee on London Cleansing that there should be a central responsible body.

It was regrettable that that committee contemplated the continuance of the present method of dumping, for some more scientific methods of disposal should be possible. If, however, dumping in some form must continue, then the local authorities ought to have the right to veto the sites proposed, subject to appeal to the Minister. Mr. F. J. Cole, chairman of Hornchurch Urban District Council, and secretary of the Essex Riverside Advisory Committee, said that the dumps fostered the breeding of rats and flies; they were a grave menace to the public health, as well as a danger to traffic by reason of the smoke and fumes which they gave off. The local authority had little or no control over them. His committee wished to press for legislation prohibiting further dumping, except with the permission and under the control of the local authorities in the districts affected, any cost incurred by this supervision to be borne by the dumping authority or its contractors. The position had been acute since about 1922, when rapid development of the area began. The local authorities did not wish to rule out dumping altogether, but they wanted to have their powers increased and something to be done soon.

Miss Lawrence made no attempt to minimize the gravity of the present state of affairs; she had examined one of these dumps and thought their existence was a public scandal. The local authorities had, however, not made full use of their existing powers. There were two methods of procedure; under the nuisance provisions of the Public Health Act and under the power to make by-laws and obtain continuing penalties for infringement. Hitherto, so far as she was aware, no Essex authority had made by-laws on this subject. Some other areas had done so, and enforcement of the by-laws had resulted in improvement of the conditions. Legislation was not only a question of the merits of the case; there was the very great difficulty that the committee had not been able to agree on the constitution of the central authority and had made no recommendation on this most vital matter. This meant, unfortunately, that any legislation was likely to be controversial, and the difficulty of finding Parliamentary time would be greater if no preliminary agreement could be reached. She could make no definite promise of legislation next session. The present position was that the standing joint committee of the metropolitan borough councils was considering the report, which had not been long in its hands, and the authorities concerned might profitably explore the matter with that committee. Meanwhile, the Minister proposed to take up with the borough councils the recommendation of the committee that the dumping authorities should be pressed to secure at once the discontinuance of the use of insanitary dumps for their refuse, and to take measures to minimize the unsatisfactory conditions now existing. Mr. Oldfield said that procedure on the lines of dealing with a nuisance was useless because it presupposed a dump; procedure under by-laws was far more promising. It would be more effective if higher penalties were provided, and if the courts had also power, if they thought fit, to prohibit the recurrence of the nuisance. There were sites altogether unfitted for any dumping at all. The authorities wanted a veto, subject to the decision of the Minister. He thanked Miss Lawrence on behalf of the deputation for her very sympathetic reception.

Actinotherapy at a Children's Hospital.

The equipment in the light department of the Belgrave Hospital for Children, Clapham Road, S.W., consists of one mercury vapour lamp and one single-pole carbon arc lamp; the former is used mainly for treating infants and younger children, the latter for treating older children unless more concentrated local irradiation is required. In the report of the hospital for the year 1929 it is remarked that in a series of 77 new cases treated by ultra-violet radiation not one showed any ill effect from the treatment. In 14 cases treatment was not persisted in, but 55 of the remaining 63 derived appreciable benefit from it. The conditions for which treatment was prescribed were various, and included, among others, rickets, debility (a category in which were grouped children who were not doing well or gaining weight, but showed no signs of organic disease), tuberculous cervical glands, abscesses, ulcers, wounds, and lupus vulgaris. The total number of exposures given during the year was 1,919, 1,287 by the mercury vapour lamp and 632 by the carbon arc lamp. All the rickets cases received ordinary dietetic treatment with cod-liver oil, but the light baths were a means of shortening the time of healing, especially in the more severe cases of active rickets. The treatment was found to be very successful in promoting healing of skin wounds and ulcers, good results having been obtained in every case. Some of the debilitated children appeared to be unaffected by the treatment; it is possible that the difference between their response and that of other debilitated children who derived benefit from the treatment may have been due to a difference in home conditions, for these, if bad enough, would neutralize the effects produced by the light baths. On the whole, the results obtained in the light department have been satisfactory, but another carbon lamp and a tungsten arc lamp are needed to make the equipment really efficient.

London School of Hygiene and Tropical Medicine.

On the occasion of this year's Colonial Office Conference an evening reception was held on Friday, July 18th, at the London School of Hygiene and Tropical Medicine. The guests were received in the magnificent library on the first floor by the chairman of the Board of Management, Sir Harry Goschen, Bt., the chairman of the Court of Governors, Sir Holburt Waring, the Vice-Chancellor of the University of London, Sir Gregory Foster, and the dean of the School, Professor W. W. Jameson, in the regretted absence, through illness, of the director, Sir Andrew Balfour. H.R.H. Prince George honoured the occasion by his presence, and after being received at the main entrance to the building His Royal Highness was conducted to the library and then visited the museum, the laboratories, and the lecture theatre. During the evening a series of scientific exhibits was shown in the library by members of the staff, and technical demonstrations were on view in the various laboratories. A cinema film, entitled "Better health," was displayed in the main theatre, and a short lecture entitled "Insect and man: some modern work," was given by Dr. P. A. Buxton, director of the department of entomology. The film depicted school life at the special schools of the Leyton Urban District Council.

Winsley Sanatorium.

The Winsley Sanatorium, which is situated near Bath, was opened in 1904; twenty-five years of work have now been completed, during which period 8,649 patients have been treated. In the annual report for the year 1929 it is mentioned that 378 patients were received, the average duration of stay at the institution being 102.4 days. In 160 of these 378 patients tubercle bacilli were found in the sputum, comparing with 157 out of a total of 390 in 1928. Dr. J. D. Macfie, the senior resident medical officer, remarks that the statistical figures relating to admission and discharge have varied but slightly during the last ten years, and that it is obvious that the search for really early cases is as difficult now as it was when regulated sanatorium treatment was first introduced in Great Britain. He regrets that inadequate attention is still being paid to the dental condition of patients requiring sanatorium treatment. Sanocrysin alone, as well as in conjunction with artificial pneumothorax, has again proved to be a failure in spite of the great care taken with the size and spacing of the doses. Dr. Macfie quotes extracts from his paper on artificial pneumothorax (jointly with Dr. G. Napier) published in the *Journal* of March 8th, which included an analysis of cases treated at Winsley Sanatorium from 1924 to 1929. He adds that the expression "return to work" was used to include women who were able to perform housework, though characterized as not being on full work; he is inclined to think that the more optimistic statement would have been quite justifiable, and more useful for statistical purposes.

Scotland.

American Surgeons in Edinburgh.

A VISIT of American surgeons, who are at present touring through some of the medical schools of Great Britain and the Continent, was paid to Edinburgh on July 14th, 15th, and 16th. The party included representatives of various surgical schools from New York to San Francisco, and included several Canadian surgeons. The arrangements for a demonstration of surgical work in the Edinburgh Medical School were under the supervision of Professor D. P. D. Wilkie. A series of operations was carried out by the surgical staff in the seven operating theatres of the Royal Infirmary in the forenoon of each day, and demonstrations were given in the afternoons in the department of surgery of the university. These demonstrations consisted of talks of twenty to thirty minutes by various members of the Edinburgh school upon subjects to which they had devoted special attention, such as thoracic surgery, the cause of torticollis, excretion pyelography, post-cricoid carcinoma, precancerous changes in the breast, splenic anaemia, renal reabsorption, and the history of the Edinburgh Medical School. On Wednesday evening, July 16th, a dinner was held in the Hall of the Royal College of Physicians, at which the American guests were entertained by the surgical staff of the Edinburgh school. Emeritus Professor Sir Harold Stiles occupied the chair, and referred to the cordial relations which were growing more and more intimate between surgeons in Britain and those on the American continent. The toast of "The Guests" was acknowledged by Dr. William Darrach, dean of the Columbia University Medical School, New York, who spoke of the preference that existed among American surgeons for the study of British rather than Continental surgery.

Edinburgh Dental School.

The summer meeting of the Edinburgh Dental Hospital was held on July 9th for the purpose of presenting prizes to the students who had been successful in the preceding academic year. Dr. William Guy, dean of the school, presided, and the prizes were presented by Dr. James Haig Ferguson, President of the Royal College of Surgeons of Edinburgh. Dr. Haig Ferguson remarked that the College of Surgeons realized that dental students constituted no small factor in the prosperity and excellence of the medical school. More than one thousand men had taken the L.D.S. diploma of the Royal College of Surgeons, and the College had therefore a special interest in this dental school. Preventive medicine was now everywhere in evidence in the medical world; this was seen particularly in the relation of the teeth to general diseases. The value of close co-operation between the dentist and his medical colleagues could not be overestimated. If an apple a day kept the doctor away, it was equally true that a raw apple at night kept the teeth clean and bright.

New South Wales.

[FROM OUR CORRESPONDENT IN SYDNEY.]

Professorial Appointments at Sydney University.

UNDER the Bosch benefaction at Sydney University the following appointments have been made: chair of surgery, Harold Dew, B.S., F.R.C.S.; chair of bacteriology, Hedley Duncan Wright, M.D., D.Sc.; chair of medicine, Charles George Lambie, *M.C.*, M.D., F.R.C.P.Ed. Professor Dew graduated M.B., B.S. from Melbourne University in 1914. In April, 1915, after a year in Melbourne Hospital, he joined the R.A.M.C., in which he served till 1919, being awarded the Medaille d'Honneur in 1916. For a year after the war he remained in London attending post-graduate classes, at the end of which time he was admitted to the Fellowship of the Royal College of Surgeons. In 1924 he was awarded the Jacksonian prize of the College, and in 1927 he completed the work *Hydatic Disease*, which won a share of the Syme research prize of Melbourne University. For the last ten years he has been practising surgery in Melbourne, acting, in addition, in an honorary capacity at the Walter and Eliza Hall Institute of Research in Pathology and Medicine. Professor Wright graduated B.A. from the University of Tasmania, and in 1916 graduated M.B., Ch.B. from the University of Edinburgh. He then joined the R.A.M.C., with which he served till 1920. On his return to Scotland he was appointed lecturer in the department of bacteriology of the University of Edinburgh. In 1921 he became a Member of the Royal College of Physicians, Edinburgh, and soon after was awarded the Lister Research Fellowship of that college. In 1925 he proceeded M.D.Ed., winning a gold medal, and in 1927 obtained the D.Sc. In 1925 he was appointed assistant lecturer in bacteriology in University College Hospital, London, where he afterwards acted as lecturer. In 1928 he became reader in bacteriology in London University, taking charge of the teaching and research work. At the Annual Meeting of the British Medical Association in Edinburgh three years ago he was vice-president of the Section of Pathology; he is a member of the council of the Pathological Society of Great Britain, and assistant editor of the *Journal of Pathology and Bacteriology*. Professor Lambie graduated M.B., Ch.B. in the University of Edinburgh in 1914. At the opening of the war he joined the R.A.M.C., with which he served for five years, being awarded the Military Cross. He is a Fellow of the Royal College of Physicians, Edinburgh, and a Fellow of the Royal Society of Edinburgh. In 1927 he proceeded M.D. At the present time he holds the positions of assistant physician to the Royal Infirmary, Edinburgh, lecturer in clinical medicine in the University, and lecturer in medicine in the School of Medicine of the Royal Colleges at Edinburgh.

The Late Dr. H. W. Armit.

With the death of Henry William Armit the medical press of Australia has lost a tried and valued servant, and the medical profession a true friend. From the date of his appointment to the editorial chair of the *Medical Journal of Australia* his main object in life was to ensure its success from the scientific, literary, and ethical standpoint. He was particularly well fitted for his position; he was a man of wide reading and knowledge, and, in addition to a long journalistic probation, he had had a special training in Association affairs, resulting from his service on committees of the British Medical Association, which rendered his editorial pronouncements valuable whether in medical, medico-political, or medico-ethical subjects. A man of strong personality, with high aims and ideals, he held strong views; if at times intolerant of opposition, he was always single-minded and fearless in his advocacy of any cause he felt to be right. His loss will be greatly felt.

India.

Jubilee of the "Indian Medical Record."

THE *Indian Medical Record* was established in 1880 by the late Dr. J. R. Wallace, who became secretary of the Indian Medical Association when this came into existence later. The February number appears as a jubilee issue, and contains an account of the sometimes chequered history of this periodical during the last fifty years. One characteristic feature of its past has been the active interest it has always taken in campaigns against certain widespread diseases; thus, special issues devoted to tuberculosis appeared in 1913 and 1925, the first being characterized by the attention devoted to methods of prevention. Special numbers dealing with a kala-azar epidemic in Bengal were published in August and September, 1923, and another special issue was devoted to the inauguration of the antileprosy campaign in India. A series of editorials in 1921 dealt with suggested schemes for the improvement of medical education in India, and active steps were taken at one time to combat the sale of unauthorized medical diplomas hailing from American sources. The present issue contains a large number of special articles on therapeutic and diagnostic topics. Dr. E. Muir contributes notes on the recent advances in the treatment of leprosy, and Professor P. Ganguly discusses an investigation into the prevalence of tuberculosis in Bengal. Comments are

made on the progress of ante-natal and post-natal work in India by Lieut.-Colonel V. B. Green-Armytage, I.M.S., professor of obstetrics and gynaecology, and surgeon to the Eden Hospital, Calcutta. Dr. L. E. Napier of the Calcutta School of Tropical Medicine, gives a short account of what India has done towards solving the kala-azar problem. An interesting frontispiece depicts Dhanvantari—according to Hindoo mythology, the founder of medical science. Reference to a primaeval churning rod and to the assistance of Vasuki, the king of the snakes, recalls inevitably Aesculapian symbolism. Since 1921, Dr. S. K. Mukherji has edited the *Indian Medical Record*; he must certainly be congratulated on the general excellence and interest of this jubilee issue.

Welfare Work in the Central Provinces and Berar.

Under the auspices of the Central Provinces and Berar Red Cross Association welfare activities are extending in the main towns and villages. The work of the Association is conducted in an area of over 100,000 square miles, and there are now forty-three welfare centres in good working order, while seven new ones will shortly become affiliated. There is also an efficient school for training health workers; a nursery school is being successfully carried on, and there are good facilities for the training of native midwives. The association has been in existence for six years, and is now extending from the towns into the more rural areas, thirty village centres having been brought into being. During 1929 a vigorous scheme for training native midwives was started in the province; but it appears from the annual report for that year of the work of the Central Provinces and Berar Red Cross Association that the effort largely failed, it being found impossible to raise enthusiasm locally. Doubt is expressed whether the present method of training these women by weekly classes, arranging for a certain amount of supervision, and awarding stipends and prizes, is altogether satisfactory; a conference is to be held to discuss the problems which have been disclosed. Great difficulty also is being experienced in finding suitable candidates for health training; the midwives who might be worth consideration in this respect are, however, generally of low educational attainments and of inferior social standing.

South Travancore Medical Mission.

The South Travancore Medical Mission at Neyyoor was founded in 1838, and is conducted by the London Missionary Society. The annual report for 1929 indicates the extent of the work and the popularity that has been won. During 1929, 1,075 major and 907 minor operations were performed in the hospital, while over 13,000 operations were performed in the associated out-stations. Dr. I. M. Orr, one of the two European medical missionaries in charge, contributes to the annual report for that year some surgical notes, from which it appears that the large number of cases of chronic appendicitis treated by operation is attributable to the delay before patients can reach the hospital, and possibly to the prevalence in Travancore of unsuitable diet and chronic constipation. He believes there is a definite relation between diseases of the appendix and affections of the stomach and duodenum. Puerperal sepsis is very common in this part of India, and Dr. Orr reports that very good results have followed the treatment of the uterus with glycerin combined with daily intramuscular injections of streptococcal immunogen. An isolation ward on modern lines was being erected when the report was prepared. A new branch hospital was opened in October at Kalayapuram, and, being situated on the main central road, is receiving patients from a very wide area. Branch hospitals in connexion with the central institution now extend for 100 miles through Travancore, reaching almost to Cape Comorin. With one exception, however (Nedungolam), they have no operating theatre accommodation, and therefore many patients requiring major operations have to travel long distances to Neyyoor. These branches are supervised by members of the staff at the main hospital, who pay occasional visits; despite their limitations they are rapidly growing in importance as treatment centres. The Neyyoor leper asylum is able to accommodate some seventy patients.

Correspondence.

STERILIZATION OF THE UNFIT.

SIR,—We have read with interest the editorial article in the *British Medical Journal* of July 5th upon the above topic. We have also read in the issue of July 12th your appreciative summary of the memorandum of the Eugenics Society.[1] May we draw attention to an argument advanced in your article which we regard as important? This is that, whereas sterilization may be an appropriate measure in individual cases for personal and family reasons, it is useless and futile as a eugenic measure calculated to diminish the incidence of mental defectiveness. There are two considerations bearing upon the general subject of sterilization, and upon your particular view of its usefulness as set forth in your article, which we think deserve attention.

1. Discussions on the sterilization of the unfit usually follow somewhat stereotyped lines. It is not necessary here to outline the arguments habitually used by advocates of sterilization. By opponents of this measure, however, two assumptions are very frequently made about the attitude of their adversaries which lead to much confusion. In the first place, it is assumed that advocates of sterilization propound this measure as an alternative to segregation, which will effect drastic economies for the ratepayer, and render most or all institutional accommodation for defectives superfluous. Secondly, the sterilizationist is credited with supposing that the national stock can *rapidly* be purged of its *entire* burden of defectiveness by the application of the *panacea* of *wholesale* sterilization to certifiable defectives. (The four italicized words occur with predictable regularity in these representations.) After attributing to him these extravagant beliefs, the "segregationist" has little difficulty in disposing of his opponent's arguments.

2. Opponents of sterilization invariably, within our knowledge, give prominence to the argument that because the bulk of defectiveness is "carried" by normal or subnormal but not defective persons, any measure of sterilizing certifiable mental defectives which ignores non-certifiable carriers of defectiveness is useless and futile. Since you state in your article that "public opinion, even intelligent public opinion, is misdirected in this matter—even by certain persons and societies who might be expected to know better," and since the main argument of your article is to the effect that sterilization is useless as a *eugenic* measure for the benefit of the race, we should like to make it clear what exactly the Eugenics Society stands for in this matter.

The Eugenics Society has never held that sterilization was an *alternative* to segregation. Our late president, Major Leonard Darwin, was so explicit about the matter that it is surprising to find the views of the society over which he presided so widely and flagrantly misrepresented. He wrote: "Segregation should be regarded as the normal method of dealing with all aments, and segregation, if properly conducted, does meet all the racial requirements." He advocated voluntary sterilization, not as an *alternative* to segregation, but as a *complement* to it, and wrote: "As regards the immediate future, what is most needed is the supply of further accommodation for aments."[2] Neither has the Eugenics Society ever held that a policy of even "wholesale" sterilization would *completely* eradicate mental defectiveness from the national stock. The question of the carrier has been carefully considered by the society, which holds that, while the problem of defectiveness will always be with us, it is open to us to determine whether, in the future, the problem will be restrained within negotiable limits, or whether it will swell to wholly unmanageable proportions.

The Eugenics Society disagrees with you and with Dr. Gill, whom you quote with approval as saying: "If every certifiable mental defective had been sterilized twenty or thirty years ago it would have made little appreciable

[1] Obtainable from the secretary, Eugenics Society, 20, Grosvenor Gardens, S.W.1, price 6d.
[2] Darwin, Leonard: *The Need for Eugenic Reform*. Murray, 1926, p. 204.

difference to the number of defectives existing to-day." One of us has shown[1] that even on the most unfavourable genetic and social assumptions with regard to defectiveness, the incidence of mental defect would be reduced by as much as 17 per cent. in one generation if all defectives in that generation were prevented from having children. We would further point out that Dr. Gill's conclusion is one of profound pessimism. According to the report of the Joint Mental Deficiency Committee, the apparent incidence of mental defectives has nearly doubled in the last twenty years. If the prevention of defectives from having children, by sterilization, is useless, so also must be the prevention of their having children by other measures, such as segregation and prohibition of marriage. All measures, in fact, are useless on this assumption, and pending the detection and sterilization of the "carrier" we are confronted with the prospect of a continual acceleration of whatever increase has really been taking place.

In conclusion, we would like to emphasize a feature of our memorandum to which you have drawn attention in your summary. Our proposals have been carefully devised to harmonize with the recommendation of the Mental Deficiency Committee, and to assist rather than to impede the creation of ampler institutional accommodation for mental defectives.—We are, etc.,

C. P. BLACKER.
R. A. FISHER, F.R.S.
R. A. GIBBONS.
R. LANGDON-DOWN.
J. A. RYLE.

July 15th.

[1] Fisher, R. A.: The Elimination of Mental Defect, *Eugenics Review*, vol. 15, p. 114

COLOUR VISION TESTS.

SIR,—In reference to the leading article on international colour vision tests in the *Journal* of July 12th (p. 68), the first point is that the mass of misstatements on this subject should be corrected, and the tests be based on the facts of colour-blindness. As stated by the Colour Vision Committee of the British Association, the old theoretical classifications should be discarded, since the facts do not agree with the definitions. Defects of light perception are quite distinct from defects of colour discrimination. The two essentials of a practical test for colour-blindness are that dangerously colour-blind persons only should be rejected by it, and that no dangerously colour-blind person should escape detection. The wool test with five test colours allows 50 per cent. of dangerously colour-blind to escape detection, and of those rejected by it 50 per cent. are practically normal sighted. Most of the other colour vision tests are as defective, if not worse. The report discountenances the use of colour names, and recommends Stilling's test.

The three most dangerous groups of colour-blind persons are the dichromic who see two colours in the spectrum, the trichromic who see three colours in it and have no yellow sensation, and those who have considerable shortening of the red end of the spectrum. An examination of one of each of these groups will show definitely the value of colour names. A dichromic regards a certain green as white and a corresponding purple also as white. When shown these colours why should he call them anything except the white which he sees? If the green be made yellower he will immediately call it green, if made bluer he will call it blue. The trichromic who sees yellow as red-green miscalls this colour red or green. Those with shortening of the red end of the spectrum may be shown a red light which they do not see at all, and say so. They may be shown a pink which appears to them a definite blue, as indeed it does to a normal-sighted person when examined through a blue-green glass. The colour-blind name colours in accordance with their colour perception.

The pseudo-isochromatic tests in common use are those of Stilling, Ishihara, and my card test. In order to ascertain the relative merits of these three tests thirty-eight consecutive referred or appeal cases were examined at the Board of Trade. None of these was examined by me alone; at least three persons, and often more, were present at all the examinations. In every case Captain Ellery or Captain Dowdy and the recorder were present. Each candidate was first examined by the pseudo-isochromatic tests, and the fact whether he was dangerously colour-blind or not was ascertained subsequently. Ten of the 38 cases were passed and 28 rejected; of the latter, 16 failed with all three pseudo-isochromatic tests, but 12 of those rejected passed the Ishihara test completely, and 11 that of Stilling. Of those who were passed, 7 showed defects with my card test; of those who failed, all were rejected by my card test, in most cases failing very badly, as, for instance, not reading card 8, a yellow-green C on an orange ground. The explanation of the difference is that a test for a dichromic will not necessarily detect a trichromic who has three colour sensations—red, green, and violet—but no yellow sensation; he is obviously dangerous, as shown by the examination with the lantern and spectrum tests. In my card test also the pattern is the same on every card, so that the examinee has to judge by colour alone and cannot follow the design of the artist.

An important point to note is that a test which is difficult to the normal sighted is not necessarily difficult to the colour-blind. This is shown by the number of colour-blind persons who can read Stilling's plates Nos. 9 and 10, the reading of which is supposed to indicate very good colour perception. In fact, a test may be constructed which can be read by the colour-blind but not by the normal sighted. Nagel's anomaloscope is not a satisfactory test, since a man may be anomalous without being colour-blind, and 90 per cent. of the colour-blind agree with the normal equation.—I am, etc.,

Board of Trade, S.W., July 20th. F. W. EDRIDGE-GREEN.

STORAGE OF *X*-RAY FILMS.

SIR,—I have read a letter in your issue of July 5th from Mr. E. J. H. Roth. Subsequent to the Cleveland disaster in America last year, the *X*-Ray and Radium Protection Committee carefully considered the whole question; several meetings were held under the chairmanship of Sir Humphry Rolleston, and, finally, definite recommendations were issued. These recommendations were published in the *British Medical Journal*, in other medical papers, and in the *British Journal of Radiology*. In addition to this, many hundreds of copies of these recommendations have been sent to hospitals throughout the country. The Ministry of Health is not only very much alive to the possible dangers, but is making full use of the committee's recommendations. Further, the London County Council and other public bodies are making inspections and advising that efficient film storage and the periodic and drastic weeding-out of used films should become the universal practice. Special film stores are being provided in all new, and in many old, departments on the lines suggested by the committee.

The question is one of some importance, though it is a matter of surprise to me that your correspondent should be in ignorance of all that has been done in the matter. The manufacturer who can produce a satisfactory "safety" film—that is to say, a film with an *acetate* instead of a *nitrate* base—will do much to solve the problem. At present the safety films on the market are not easy to handle, and they are inferior in quality. May I suggest—as I fear that your correspondent does not, or has not, read his journals as all good doctors ought to do—that it might be a gracious act on your part once again to publish the recommendations of November last.—I am, etc.,

STANLEY MELVILLE,
Honorary (Medical) Secretary, X-Ray and Radium Protection Committee.

London, W.1, July 16th.

*** The committee's recommendations were printed in full in our issue of November 16th, 1929 (p. 923). If there is a general wish for their republication we will act on Dr. Melville's suggestion.—ED. *B.M.J.*

INTRAVENOUS SCLEROSING SOLUTIONS.

SIR,—The recent articles on alternative solutions for the injection treatment of varicose veins will doubtless be of interest to many who practise the injection treatment. It is obvious from the variety of solutions recommended, and the different methods of employing them, that there is no solution which can be called highly satisfactory. Like others, I have had very variable results with different solutions, sometimes getting a very extensive painful thrombus with a small dose, but more frequently getting absolutely no result whatever, even when I used large doses of the solution.

I tried sodium morrhuate in 5 per cent. solution in doses of 2 c.cm. into each puncture of a vein area, and obtained no result whatsoever in four different cases. I should be very glad to learn from some of your readers whose experience is extensive how soon after an obvious failure with 20 per cent. quinine and urethane or sodium salicylate, or 5 per cent. sodium morrhuate, can one proceed to inject the same veins again? I find patients are greatly disappointed when nothing whatever happens after, for example, the injection of 1 c.cm. of quinine and urethane, since they have usually been recommended to come to me by others who have been treated by me, obtaining a good, firm thrombus in the vein, and ultimate success. These patients usually want another injection two or three days after the first failure, and ask for a good strong dose. I have only once tried this method, and again got no result. Perhaps some other solution, or a combination of two solutions, would be effective.—I am, etc.,

Charing, Kent, July 21st. H. E. LITTLEDALE.

TECHNIQUE OF INJECTING VARICOSE VEINS.

SIR,—I read with great interest Dr. Noel Scott's article on the treatment of varicose veins by injection, in the *Journal* of July 12th (p. 58), and found myself, with just one exception, in complete agreement with every point in his able description. This exception occurs in the following passage: "It is not desirable to use a tourniquet because it produces venous engorgement, it is difficult to manage single-handed, and it causes considerable pain to the patient." I should therefore like to put forward my own experience as to the value of the tourniquet in the technique of vein injection.

Dr. Scott states in his article that "the ideal position of the patient is prone upon a couch," yet he acknowledges that "in most cases the patient is treated while sitting on an ordinary chair." I take the view that the injection should *always* be given with the patient recumbent, and *never* with the legs down, and should like to quote the following extract from my book, *Varicose Veins, Haemorrhoids, and Varicocele; their Treatment by Injection*, to explain my reasons for being so emphatic in this respect.

"In the upright position, the vein being distended with blood during the actual injection of the sclerosing solution, the degree of dilution cannot be gauged, and this tends to produce varying results. Whereas, in the lying position, the vessel is collapsed and practically free from blood, and, accordingly, the same dilution is not in effect. Also, when the vein is distended, leakage of blood or solution around the site of puncture is more likely, resulting in sphacelus or haematoma production, or, at the least, considerable bruising. With the subject in the lying position the operator is able to perform the treatment with much greater ease, and can control the point of his needle with much more certainty, since he may steady his hands by resting them on the patient's leg, thus avoiding the danger of having the needle-point slip out of the lumen of the vessel or pierce the deep wall of the vein. One final advantage of the lying posture is that it is decidedly rare for the patient to feel in the slightest degree faint, whereas in an upright position faintness is not uncommon."

If the above seems to show that the recumbent posture of the patient is essential, then it seems to me that any technique which makes this position possible, providing it is devoid of any vital objections, is the one to employ. Now the use of the tourniquet certainly does make the recumbent position possible in all cases, and I am sure I can show that it is devoid of any vital objection.

In the first place, Dr. Scott's objection on the score that the tourniquet causes considerable pain to the patient may be declared null and void if the pneumatic tourniquet is employed, especially when it is used with a manometer. The pressure need never exceed 140 mm. Hg, and, provided that the tourniquet is a nice wide one, the sensations of the patient will certainly not register pain. Secondly, the statement that a tourniquet is difficult to manage single-handed certainly applies to most designs, but it most decidedly does not apply to the pneumatic sort. When using the latter, as soon as the needle is in the vein, no dexterity at all is required to release the valve with one hand, while the other holds the syringe perfectly steady. Finally, Dr. Scott maintains that it is not desirable to use a tourniquet because it produces venous engorgement. But, surely, this is just what is required in order to introduce the needle into the vein. That it is completely undesirable after this has been effected, I agree, but I never start to inject the sclerosing fluid until all tourniquet pressure has been released and the veins have flattened, leaving the leg pale in colour.

In conclusion, I am sure that those who care to try this method of using the pneumatic tourniquet with manometer will soon be saying, "Since then I have used no other."—I am, etc.,

London, W.1, July 15th. RONALD THORNHILL, M.B., Ch.B.

TREATMENT OF ANAL FISSURE, SPASM, AND PRURITUS ANI.

SIR,—Dr. Frank Howitt's article published on June 28th (p. 1168) was of much interest, but its utility will be lessened if it should lead to the impression, as it well may, that stricture, ulcer, and painful spasm of the rectum frequently follow operations for haemorrhoids. They only arise as the result of wrong or unskilful technique, and in these circumstances are unfortunately liable to occur no matter what type of surgical operation or injection (should the injection method be used) is employed.

Dr. Howitt discusses a paper by Bensaude and Meyer which gives results of the treatment by diathermy of 114 cases of stenosis and spasm of the rectum. I am familiar with the work of these eminent writers, and have frequently visited Dr. Bensaude's clinic for the non-operative treatment of gastro-intestinal and rectal complaints at the Hôpital St. Antoine, Paris. A large number of their cases of stricture and ulceration are not the result of operations for haemorrhoids, but are due to syphilis and gonorrhoea. In this country such cases are probably to be found mainly at genito-urinary and venereal clinics, since, admittedly, stricture cases seen at our own rectal clinics are usually due to sloughing and necrosis following badly performed operations, or following injections (for piles) which have been given in too great strength or amount, or into a wrong site.

Treatment by diathermy is effective in these cases. Prevention is, however, better than cure. Neither stricture nor ulceration nor other painful conditions will occur if the correct technique is employed for injection and ligature methods, and there is careful selection of cases suitable for the mode of treatment adopted. In fourteen years' experience, and in several hundreds of cases, I have not had a serious ill-effect following either injection or ligature of haemorrhoids (under local anaesthesia).

Operative and injection methods have each their own extensive field of usefulness, within which each is the method of choice. My technique (a modification of that described by Mr. Mummery and Mr. Back) and mode of selecting cases I described in the *Journal* of April 19th, 1924. Readers will also find in the *Practitioner* of March, 1915, a full discussion of the advantages and disadvantages of both injection and operation by eminent proctologists who first introduced the injection method.

For the treatment of fissure there are simpler and more effective methods than diathermy. Bensaude himself has discarded it, and now employs a modification of a method which I have used for many years. He injects a few

drops of quinine-urea solution under the fissure and touches the surface with pure silver nitrate. He assured me his results were satisfactory in most cases. My own method (realizing that spasm of the sphincter is the cause of delay in healing) is to anaesthetize the sphincter with 0.5 per cent. novocain, or quinine and urea solution, using the same technique which I employ for removal of haemorrhoids (*Journal*, March 16th, 1929), and injecting also a few drops beneath the fissure. The sphincter relaxes almost immediately, and a speculum can be painlessly passed for the diagnosis or treatment of other rectal conditions. A simple dressing such as pure ichthyol should then be applied daily. (I claim no originality for this method, which has been practised by Hirschmann and others for many years.) Old and dense scar tissue when present I then remove by the simple method advised by Mummery. Many fissures of old standing can only be cured by this little operation.

The introduction by Mr. W. B. Gabriel (*Journal*, June 15th, 1929) of a new preparation, "A.B.A. anaesthesin solution," a most valuable contribution to the treatment of ano-rectal complaints, has made this method of treating fissure more effective, since the anaesthetic effect lasts many days; I now employ A.B.A. in preference to novocain.

For pruritus ani, if a lengthy trial shows that the good effects of the A.B.A. solution are permanent—and Mr. Gabriel's experience, described with such restraint, holds out hope for this result in certain cases—the great value of this solution will be inestimable. Colonel W. P. MacArthur's letter in the *Journal* of June 28th (p. 1195), especially his helpful advice on diagnosis and treatment, was of much practical value. I also have found threadworms in many cases. Ball's operation, although recurrences after it are frequent, has given relief in many instances I have known when all other methods were useless, but it should not be advised, and seldom is, until other means have failed. The fact that patients sometimes submit to it a second time and demand it themselves (I have known more than one such patient) is evidence of how sufferers appreciate even its temporary efficacy. General as well as local examination is necessary, since intractable pruritus is often a symptom of remote disease, such as diabetes.—I am, etc.,

London, W.C.1, July 14th. P. KENNEDY MURPHY.

DERMATITIS FOLLOWING USE OF IODINE SOLUTION.

SIR,—Mr. Charles Alexander's description in the *Journal* of July 19th (p. 100) of a case of fatal dermatitis following the use of iodine spirit solution prompts me to record two cases which, fortunately, did not end fatally, but caused much pain and distress, and were due to the use of the common tinct. iodi mitis, *B.P.*

The first was that of a man, aged 42, who used the tincture as a counter-irritant for a dull ache in his left arm and forearm. Three hours after a single application the arm was covered with huge blisters, separated from each other by superficial cracks of the skin. When I saw the patient he was sitting in bed undressed, swaying, and supporting with his right hand the painful arm. He had a pale, sunken face, and was obviously in great pain; his temperature was 100° F., and his pulse 60. Soon after I arrived he vomited, and complained of dimness and severe headache. I treated the patient as for burns, and he was able to leave his bed on the fourth day; the arm healed without complications.

The second patient, a woman aged 40, had a small superficial cut (a few millimetres long) on the palmar aspect of the terminal phalanx of the fourth finger of the left hand. She used the remnants of tinct. iodi mitis which she had in her medicine chest, and soon after complained of severe pain in the hand and arm, so unbearable that I was called out at 2.30 a.m. Solutions of liquor ammon. sod. bicarb. and alcohol were used; the pain eased, and she was able to sleep a little. The finger was swollen, and slight pain, concentrated in the terminal joint, which was stiff, persisted for several days, when the skin broke and some fluid escaped.

While there is no doubt that the tincture used in the last case was an old evaporated, and therefore concentrated, solution, I am not sure what the tincture in the first case looked like, except that the patient bought it from well-known chemists in the district. Both patients are healthy individuals, and do not remember ever using tinct. iodi before.

It seems likely that these were cases of idiosyncrasy, but whether the character of the solutions used had anything to do with the pathological phenomena is impossible to say. It warrants, however, careful observation by everyone using iodine in some form or other.—I am, etc.,

London, N.4, July 21st. D. G. DE BOUK.

*** In the nineteenth edition of *The Extra Pharmacopoeia* (Martindale and Westcott) the warning is given that the tinctura iodi (mitis) "should be recently prepared, or is liable to contain aldehyde and hydriodic acid. This aldehyde in presence of iodine and water oxidizes, forming more hydriodic acid as well as acetic acid. The acetic acid may become etherized, forming ethyl acetate. A little iodic acid added to the tincture will prevent decomposition; it breaks up hydriodic acid as formed."

ANAPHYLAXIS AND DISEASE.

SIR,—I am greatly interested in a remark by Dr. Langdon Brown in his paper on predestination in disease (*Journal*, March 22nd, p. 525). He writes: "In less degrees both allergy and anaphylaxis declare themselves in violent attempts to get rid of the foreign invader. These attempts take the form of diarrhoea and vomiting, of giant urticaria, or of asthma."

In an article on anaphylaxis printed in the *Medical Journal and Record* of February 3rd, 1926, I tried to place these phenomena under the parasympathetic mechanisms. Briefly, they may be expressed thus. All tissues under the control of the automatic system must be in communication with one another by means of either nervous or hormone influence. They must either have one set of impulses stimulating their function and another inhibiting it, or they must have stimulating impulses alone, the tissues resuming normal function on cessation of the stimulus. The automatic nervous system, together with certain of the ductless glands, is clearly divided into opposing forces, each of which has its special functions.

With the sympathetic are bracketed the thyroid, pituitary, and gonads, and with the parasympathetic are associated the parathyroids, thymus, pancreas, spleen, liver, and possibly others. Dr. Langdon Brown has well described how the sympathetic system and its allies take control of all matters pertaining to defence and self-preservation against all factors potential for harm, be they bacteria, wild animals, or financial difficulties; when excessively stimulated they cause symptoms, as seen in exophthalmic goitre and shell shock. The parasympathetic and its auxiliaries preside over the assimilation of food when once procured, and the elimination of all wasteful and harmful products. This is clearly shown by the innervation of the intestine. Stimulation of either of these groups produces a characteristic train of symptoms varying largely according to the severity of the stimulus. The most primitive of the parasympathetic reactions is to eject or vomit. Almost any parasympathetic stimulus causes this, as is seen in seasickness from vagal irritation of the semicircular canals. The vomiting of pregnancy is possibly due to stretching of the uterus; this, as well as early attempts at smoking, stimulates the vagus unduly. Increased intestinal peristalsis resulting in diarrhoea is due to increased vagal stimuli. Vagal stimulation causes contraction of the bronchial muscles, producing asthma. When toxic material gains entrance to tissues that are sensitized immediate efforts are made to eject it; this takes the form of urticaria or angioneurotic oedema, and is identical with that produced by any dermal test for foreign protein. This reaction must also fall into place as a parasympathetic act, and is part and parcel of the same mechanism which enables an amoeba to extrude undigested material. A stimulus may produce the whole syndrome or part of it according to its severity.

The understanding of these two syndromes will help much to unravel symptoms generally, which will be found to fall

into three main groups: those due to direct injury of tissues and organs impairing their function; those due to sympathetic overactivity; and those due to overactivity of the parasympathetic group. The vitamins probably form another group of their own.

It would be interesting to have expressions of opinion on these matters, since I believe the placing of anaphylactic phenomena under the parasympathetic group is a new conception.—I am, etc.,

SYDNEY PERN, M.R.C.S., L.R.C.P.

Melbourne, June 11th.

SPONTANEOUS SURGICAL EMPHYSEMA.

SIR,—The reference to spontaneous surgical emphysema, associated with labour, made by Dr. F. Bedo Hobbs in the *British Medical Journal* of May 24th (p. 950) recalls an isolated and puzzling observation of my own, which seems worth mention in this connexion.

Some time ago I saw, in consultation, an English child, aged 12, who, in the course of an attack of capillary bronchitis, had suddenly presented a swelling of striking proportions on the left side of the neck. The swelling was neither red, hot, painful, nor tender, and on palpation gave the characteristic crackle of "surgical emphysema." Subsequently the swelling spread to both sides of the neck, head, and chest, to the left arm, and to the left side of the abdomen and vulva. It had completely disappeared within fourteen days. The bronchitis was not associated with violent coughing, there was no evidence of vesicular emphysema, and the patient made an early and satisfactory recovery.

The source of the subcutaneous collection of gas is a mystery.—I am, etc.,

R. T. WELLS,

Rawalpindi, June 22nd. Lieut.-Colonel I.M.S., Civil Surgeon.

ANTIMALARIA MEASURES.

SIR,—Is there anything in this talk that malaria is to be reduced, in the first place, by improving the economic conditions of the victims?

We had no malaria in the hospital at Taranto when I served there in 1919. Was that because we were well fed, or was it because Colonel J. C. Robertson, I.M.S., and Sir Ronald Ross had had the area drained, cleaned, and oiled as necessary, and we ourselves were lodged in screened houses? Lord Allenby's troops were kept tolerably free from malaria through the summer of 1918 by antimosquito measures, but as soon as these well-fed and safeguarded troops were exposed to the myriads of female mosquitos in Northern Palestine half of them or more were down with malaria within three weeks. People in flooded areas and swamps are always poorer than those on drier land, which is why they are driven to the swamps; but it is better to give them free drainage than free meals, for they will make more money in their longer malaria-free time, and will buy the meals regularly for themselves. We are told that ankylostoma-infested communities when cleared of this pest show a new energy and industry. Not otherwise, probably, will the southern European nations, freed from the malarial oppression which for so long has settled on them and blighted them, develop a new energy and courage, proving themselves perhaps the equals or superiors of the northern nations who live less in the life-giving sunlight.

What Lieut.-Colonel Gill calls the new school seems to me to be the older, for it goes back to the old methods I recall from the eighties, when new settlers drained an area for amenity merely, with no direct intention of limiting mosquitos thereby. It then took three men, successively, to achieve what one man may do now, but by the time it was done by the last the other two were invalided home or dead. People who do not remember the old times cannot imagine what increased comfort and life we have derived from Sir Ronald Ross's discoveries and the teachings of the antimosquito school. Before his time malaria was supposed to be due to climate; we could do nothing to prevent it, and were laughed at if we tried.—I am, etc.,

W. E. HOME,

London, W.1, July 8th. Fleet Surgeon.

Obituary.

COLONEL JOHN RICHARD DODD, late R.A.M.C. (ret.), died at Bournemouth on June 11th, aged 72. He was the son of Dr. T. A. Dodd of Ryton, co. Durham, and was born there on May 18th, 1858. He was educated at Barts and at Newcastle-on-Tyne, where he gained the Dickinson, Tulloch, and Heath Scholarships at Durham University, in which he graduated as M.B. in 1879. He also took the M.R.C.S. in 1879, and subsequently the F.R.C.S., in 1896, and the D.P.H. of the London Colleges in 1899. After filling the post of house-surgeon of Newcastle-on-Tyne Infirmary he entered the Army as surgeon on February 5th, 1881, becoming lieutenant-colonel after twenty years' service, and colonel on September 9th, 1908. He retired on October 12th, 1912. He served in the Ashanti expedition of 1896, and received the star given for that campaign. He was the author of the article on Ambulance in the *Encyclopaedia Britannica*, of Diseases of Soldiers in *Dangerous Trades*, and of numerous articles in the *British Medical Journal*, *Graphic*, *Sporting and Dramatic News*, and other periodicals. He was greatly interested in natural history and archaeology, was a keen fisherman, and a good shot. In 1914 he went to Trinidad under the Rockefeller Commission to investigate ankylostomiasis in the Indian population, but returned to England to rejoin on the outbreak of war, and was re-employed from February 17th, 1915, till the end of the war. After the armistice he settled in Bournemouth, where he devoted himself to archaeology and to the public service, being one of the early organizers of the National Citizens' Union, and a member of the Royal Empire Society and of the Bournemouth Natural History Society. In 1897 he married the eldest daughter of Mr. J. W. Cross, general manager, London and Provincial Bank, who survives him, with one son, Captain T. Dodd, R.A.M.C.

Dr. WILLIAM DAVID JOSEPH MORRIS, an old Cardiff practitioner, died suddenly at his home on July 5th. Although he had been in indifferent health for some time he was up and about to the last, attending a county cricket match only the day before. Born in 1860 at Fishguard, Pembrokeshire, he was educated at the local Grammar School, and at Long Ashton School, Bristol. It was at Long Ashton, the home of the great "W. G." and his brothers, that was engendered and developed Dr. Morris's love of cricket and his skill at it. He received his medical education at Guy's Hospital, obtaining the diplomas M.R.C.S. in 1881, the L.R.C.P. Edin. and L.M. in 1882, and the L.S.A. in 1883. After leaving Guy's in 1884 he settled in Cardiff, where he spent the whole of his professional career, building up an extensive practice. He was a thoroughly capable family doctor, much respected and trusted by his patients. He possessed a high degree of manipulative skill, and had he been more ambitious might have become quite a good surgeon; as it was he had many major operations to his credit. He was not a great reader, being essentially an "outdoor man." His interests were many and varied. He was a very keen sportsman and an excellent shot, especially with the rifle. In his early days Dr. Morris was an ardent follower of hounds, and was associated with three different Hunts in the county; he was equally enthusiastic in support of cricket and Rugby football. A connoisseur of no mean order, he had a large collection of curios and antiques. Among his many activities was Volunteering, and when the Volunteers were disbanded he retired with the rank of lieutenant-colonel. He served also as major in the 2nd and 3rd Battalions of the Welch Regiment. During the war he was in charge of the Mansion House and the St. Pierre Voluntary Hospitals. A prominent Freemason, he was a Past-Master of his Lodge. He resigned the appointment of medical officer to the Cardiff Post Office on reaching the age limit in April. A colleague writes: Among the many traits of his attractive and charming personality should be mentioned the love of both children and animals. His influence over the latter was remarkable. At one time

he possessed quite a menagerie in his bachelor home, among its denizens being such extremes as a fox and a python, both of which he had succeeded in taming. He was a member of the Cardiff Naturalists' Society (Archaeological, Geological, Botanical, and Photographic Sections), an ex-president of the Cardiff Medical Society, and a member of the British Medical Association, being chairman of the Cardiff Division in 1925–26. He was a Justice of the Peace for Glamorgan.

The death occurred on July 7th, at Victoria, British Columbia, of Dr. PHILIP BRUNELLESCHI COUSLAND, who, as editorial secretary of the Chinese Medical Translation Committee for many years, may be looked upon as one of the "fathers" of modern medicine in China. Born at Glasgow in 1861, he was educated at George Watson's College, Edinburgh, and Edinburgh University, graduating M.B., C.M. in 1882. After holding the post of house-physician at Leith Hospital he went out to China under the Presbyterian Church of England and the China Medical Missionary Association to Swatow Hospital in 1883. Three years later he transferred to Chaochowfu, where he was superintendent of the Burns Memorial Hospital, and, until 1906, was engaged also in evangelistic and other work, including a great deal of translation. He then removed to Shanghai, his services being lent to the China Medical Missionary Association (now the China Medical Association) for the purpose of editing, translating, and publishing medical books in Chinese; he was president of the association from 1910 to 1913. In 1890 Dr. Cousland had become a member of the terminology committee of the association, and the bulk of its work fell upon his shoulders. It largely lay with him to render into Chinese ideas and words wholly foreign to that language. The ideographs had each to be considered separately by the committee before they were adopted or improved and finally used in the translation of foreign medical works. The Chinese Government eventually itself took part in this task, and appointed a special committee on which the Medical Missionary Committee was represented. Dr. Cousland was the author of the *English-Chinese Medical Lexicon*, and he translated Osler's *Practice of Medicine*, Halliburton's *Physiology*, and Younger's *Insanity in Everyday Practice*. Though he retired from active work some years ago, he remained on the "honorary list" of his society. Having settled at Victoria, British Columbia, where his younger son was in medical practice, he continued until recently to visit Shanghai and Japan from time to time in connexion with medical translation work.

We regret to record the death, on July 19th, of Dr. T. OUTTERSON WOOD, at his residence at Torquay. He was born at Rainton, Durham, in April, 1843, and received his medical education at the Newcastle School of Medicine and at St. Bartholomew's Hospital. He became M.R.C.S. Eng. in 1868, F.R.C.S.Ed. in 1874, F.R.C.P.Ed. in 1879, M.D.Durh. in 1886, and M.R.C.P.Lond. in 1888. After holding a resident appointment at the Royal Infirmary, Newcastle-on-Tyne, Dr. Outterson Wood decided to take up psychiatry as a specialty, and was appointed resident medical officer at Dunston Lodge Asylum, Newcastle-on-Tyne. That post he relinquished to become assistant medical officer to the Kent County Asylum, Barming Heath. On the recommendation of the Commissioners in Lunacy he was next appointed medical superintendent of the Isle of Man Government Asylum. In 1883 he commenced consulting practice in London, and was elected physician to the West End Hospital for Nervous Diseases, Epilepsy, and Paralysis, and to the St. George's and St. James's Dispensary. Dr. Outterson Wood was president of the University of Durham Medical Graduates' Association in 1897 and of the Medico-Psychological Association of Great Britain and Ireland in 1905–6. He took a keen interest in the work of the British Medical Association, and was president of the Medico-Psychological Section of the Annual Meeting in Belfast in 1909. He was also in former years a frequent contributor to the editorial columns of this *Journal*. On relinquishing practice some fifteen years ago he retired to Torquay. His recreations were trout fishing and shooting, in the first of which he was very adept. His wife died in 1907.

Miss CATHERINE JANE WOOD died on June 14th, at Hazel Rough, near Hartfield, Sussex, aged 88. She was very infirm, with her sight and hearing almost gone, and she suffered from severe rheumatoid arthritis. She was born in Doughty Street, London, and most of her active life was spent in London. She received her training in nursing under Dr. Charles West at the Hospital for Sick Children, Great Ormond Street, and was connected with that hospital and its convalescent branch at Highgate for over fifty years. She belonged to a group of highly endowed ladies who, without any pecuniary award, gave splendid service during the early and middle periods of the hospital's history; she ultimately became lady superintendent at Great Ormond Street. When her work there was completed she gave unstinted service in several forms of activity concerned with sick-nursing. She was the first to start a hostel for private sick-nurses, in which nurses themselves had shares, and she took part in the formation of the British Nurses' Association and of the Invalid Children's Aid Association. With Miss Spenser Perceval (Mrs. Howard Marsh), she was a founder of the Alexandra Hospital for Children with Hip Disease. In 1892 she investigated, at the request of the *British Medical Journal*, the nursing conditions in English workhouses, and also the arrangements for looking after old people in workhouses. This was followed by a like investigation of the workhouses in Ireland. Miss Wood's reports were published in the *Journal* in 1894, and they had no mean share in bringing about reform. She wrote an excellent guide to nursing in children's diseases, and an article *in* Quain's *Dictionary of Medicine* on children's hospitals. Miss Wood was a woman of high moral purpose, of great strength of character, of intellectual vigour, and of unwearied self-sacrifice. She will never be forgotten by those who worked under her and with her, side by side in many activities.

THE LATE DR. FRANK E. TAYLOR.

DR. HERBERT R. SPENCER writes: There is an important omission in the obituary notice of the late Dr. Frank E. Taylor which I would like to supply. I allude to his work as director of the "Review of Current Literature" in the *Journal of Obstetrics and Gynaecology of the British Empire*, a post he occupied for many years, up to the time of his death. This work, which, though in poor health, he carried out most admirably and unselfishly, will always keep his name in grateful memory by British gynaecologists.

The Services.

CONDITIONS OF SERVICE IN THE R.A.M.C.

DR. F. E. FREMANTLE, M.P., sends us for publication a copy of the following letter, dated July 14th, 1930, which he has received from the Secretary of State for War.

"With reference to your letter of June 19th, with which you sent me copies of letters on the subject of conditions of service in the Royal Army Medical Corps, I am writing to let you know that I am going into these questions, but you will, I think, understand that it will take time, and I cannot, as you suggest, make improvements to take effect this month. I think that the whole matter must be considered in connexion with next year's Estimates, and that I shall not be able to make any announcement in advance of my Estimates speech."

Dr. Fremantle asks us to add that the "copies of letters" referred to by Mr. Shaw were sent to him as typical complaints, without any indication of the writers' names and addresses. In no instance has Dr. Fremantle revealed the identity of the officers who have written to him on the subject.

LIEUT.-GENERAL H. B. FAWCUS, Director-General Army Medical Services, will open the museum of the 47th (2nd London) Division R.A.M.C.(T.A.), at the Duke of York's Headquarters, Chelsea, to-day (Saturday, July 26th), at 4 p.m.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE Navy Estimates and the vote for the Board of Trade have been considered in the House of Commons this week. There were further discussions on the Finance Bill and other measures.

The Parliamentary Medical Committee met for the last time this session on July 22nd. After considering the proceedings at the recent meeting between the Minister of Health and its representatives, the committee decided that its views regarding a central body to co-ordinate the work of rheumatic clinics would be met if the Minister appointed a Rheumatism Council of the same type as the Cancer Committee. The Medical Committee further held that this council should include practitioners actually in practice and treating rheumatic cases. The committee further discussed the requests for the issue of test prescriptions by panel practitioners. It held that for the Ministry of Health to demand such issue was *ultra vires*.

In the House of Lords, on July 21st, the Housing (No. 2) Bill passed through committee, with amendments.

In the House of Lords, on July 22nd, the Housing (Scotland) Bill was read a second time.

In the House of Commons, on July 22nd, the Road Traffic Bill was read a third time. It has already passed the Lords.

Ophthalmic Benefit.

In the House of Commons, on July 15th, Mr. WOMERSLEY moved that an address be presented to the King praying that Regulation 25 of the National Health Insurance (Additional Benefits) Regulations, 1930, dated June 18th, 1930, be annulled. The regulation, he said, dealt with additional benefits for insured persons respecting ophthalmic treatment and the supply of optical glasses. He objected to the portion of the regulation which read: "Where a member has submitted himself to the examination of a medical practitioner under the scheme of a body or organization which provides both ophthalmic examination and optical appliances, he shall not be entitled to obtain the appliance prescribed by such practitioner from an optician who is not associated with that body or organization." Under the present arrangements they had a body of qualified opticians known as the Joint Council of Qualified Opticians. They had been prescribing for some considerable time for members of approved societies, and the arrangement had worked very satisfactorily. But another body had come along. Whenever a member of the Qualified Opticians' Council examined a patient and found that he required surgical treatment he immediately reported to the approved society, and arrangements were then made for the patient to be examined by an ophthalmic surgeon. The ophthalmic surgeons had set up a board known as the National Ophthalmic Treatment Board, and they had taken on to that board certain selected firms which supplied optical glasses. They had gone to the Ministry of Health and requested that they should be given special privileges for that particular board. This question was raised in 1928, when the National Health Insurance (Amendment) Act was before the House, and various objections to the proposed arrangement were put forward. The approved societies now wanted to know why this change-over should be made. Throughout the United Kingdom there were thirty firms attached to the National Ophthalmic Treatment Board, but 90 per cent. of those were in the hands of four firms only, which had branches scattered throughout the country. If the regulation was passed they would be the only people available to make up the glasses required by members of approved societies. It was not fair to bring in this drastic change, buried in the midst of many new regulations which it might be desirable to introduce. Before any such action was taken a round-table conference of all the parties concerned ought to have been held. If the regulation was passed the position would be that a member of an approved society would come to a member of the organization that had hitherto supplied him with glasses, and the doctor, realizing that the defect required something more than the attention of a refractionist, would say, "You must go to a surgeon." The man would be reported back to the society, which would send him to a surgeon. That surgeon could not send him back to have the prescription made up by the person who first called attention to the defect. He would have to go to one of the members of this favoured board. The approved societies said that the members ought to have a free choice to go to qualified and approved men.

Mr. BIRD seconded the motion.

Mr. GREENWOOD said that he did not know what case he had to answer. No drastic changes had been made. These regulations were formulated only after full consultation with the Approved Societies Consultative Council of the Ministry. For years there had been two different schools of thought on this question of ophthalmic treatment. There was what he might call the view of the medical profession, and there was the view expressed by the Joint Council. He was not concerned with conflicting professional interests. His concern was service to the members of approved societies. It was his duty to hold the balance as fairly as he could, and to give the maximum number of alternative opportunities for service to insured persons. That was done under the regulation now being discussed. Under it any approved society was to be free to make its normal arrangements, if it was providing ophthalmic treatment, directly with a representative body of opticians, and in the majority of cases that course would be followed. The regulation allowed a society to arrange for examination in all cases by ophthalmic surgeons. There were two other alternatives which had been designed to make it possible to get advice from ophthalmic surgeons and to provide that service at a minimum cost. The British Medical Association had made two alternative schemes. In the first one it had prepared a list of medical practitioners who had had experience of dealing with ophthalmic cases and were willing to test the sight of insured persons and prescribe glasses. The insured person, having got his prescription, could go to any qualified optician he chose throughout the length and breadth of the land. The second scheme was a combined one, being an arrangement between the medical profession on the one hand and—it was quite true—a body not representing a large number of firms, the Association of Dispensing Opticians, on the other—firms, he imagined, to which most members of the House of Commons went when they had their prescriptions made up. They never prescribed, but always made up prescriptions which came to them from ophthalmic surgeons. Under that combined scheme it was quite clear that they could not have that free choice of opticians that was available under other schemes. If they had, the scheme would go to pieces. It was reasonable to say to an insured person, "If you wish to go to an ophthalmic surgeon, if you feel that your eyesight needs highly skilled advice, then we have got to tell you that there are only a limited number of opticians to whom you can go to have your prescription made up." That did, in a way, interfere with the free choice of the insured person, but he acted with his eyes open. The insured person need not have this scheme unless he wanted it. He hoped the House would pass these regulations as provisional regulations for the benefit of insured persons.

Mr. RHYS DAVIES said that there was now freedom of choice on the part of the insured person to go to either a panel practitioner, a dentist, or a chemist. The insured person also had freedom of choice up to the present to choose his optician, but by passing these regulations that freedom of choice for the insured person would be taken away. It would be well if the Minister of Health would take this part of the regulation back.

Dr. MORRIS-JONES said that if the regulation was deleted, according to the motion, it would certainly take away whatever choice there was to the insured person. What were the two schemes before the House? An insured person could go to an optician who was a member of this organization and get his eyes tested, and he could get glasses for a fee of 15s. He could, under the scheme of a National Ophthalmic Treatment Board, go to a specially qualified man, approved by eminent ophthalmic surgeons appointed by the Board, specially qualified to examine eyes, for an inclusive fee of 18s.—namely, 10s. 6d. for the examination and 7s. 6d. for the glasses, compared with the 15s. which he paid under the other scheme. Surely the House was not going to deprive the insured person of the right of choosing which of the two he preferred. He hoped that the House would not deprive a large number of opticians of the opportunity of making a living.

The motion was rejected by 144 votes to 23.

Silicosis Bill.

The Workmen's Compensation (Silicosis) Bill was considered by a Standing Committee of the House of Commons on July 8th and 10th. An amendment to Clause 1, to include forms of dust other than asbestos dust, was ruled out of order, and an amendment to Clause 2, to provide that the medical expenses fund should be maintained by subscriptions from employers, was negatived. Dr. VERNON DAVIES proposed an amendment to apply the bill to "groups of industries and processes in which silica or asbestos is used industrially." He withdrew the amendment after Mr. SHORT pointed out that Parliament sought to provide for workers who were exposed to dust even if that dust were not used industrially. Dr. FREMANTLE spoke of the value of employing under the scheme medical men who were in general practice, instead of only employing whole-time officers. A man who gave up his life to examining people suspected of silicosis or asbestosis would make mountains out of molehills. Mr. SHORT said that the Departmental Committee appointed to advise the Home Secretary about these medical arrangements did not share Dr. Fremantle's view. The committee was satisfied that encouragement and facilities would be given these officers to keep themselves up to date in all medical science. Discussion followed on the position under the bill of men working in coal mines and affected with silicosis where there is not 50 per cent. of free silica in the dust. Mr. SHORT said that where the Home Secretary believed there was a risk of silicosis he could apply the compensation schemes without regard to the 50 per cent. limitation.

The bill came before the House of Commons on July 15th, when it passed through report and was read a third time.

In the House of Lords, on July 22nd, a Commons amendment to the Workmen's Compensation (Silicosis and Asbestosis) Bill, was, on the motion of Earl RUSSELL, accepted.

Small-pox.

Mr. GREENWOOD, in reply to Mr. Broad, stated, on July 17th, that no deaths from small-pox were registered during 1929 in Norway, Sweden, Germany, Switzerland, Austria, Denmark, or France. There were 3 deaths in Spain during 1929 and 5 deaths in Italy in 1927. No particulars were available in regard to Russia.

Replying to Mr. Groves, on July 21st, Mr. GREENWOOD said that in the fifty-two weeks ended December 28th, 1929, 39 deaths occurred in England and Wales which were classified as due to small-pox. Of these cases, patients aged 3 days, 14 days, 3 weeks (two cases), 1 month, 2 months, 8 months (two cases), 16 months, 2 years, 9 years, 13 years, 16 years, 17 years, 24 years, 25 years, 34 years, 36 years, 37 years, 44 years, 63 years, 64 years, and 65 years were not vaccinated. The ages of the patients vaccinated were: 14, 20, 28, 29, 34, 36, 42, 43, 45 (two cases), 59, 61, 65, and 75 years. In one person, aged 65 years, and one aged 74, the vaccinal condition was doubtful; no information was available in the case of a person aged 66 years. All those vaccinated had been vaccinated in infancy only, and were aged 14 years and upwards at the date of death.

Indian Medical Degrees.

Mr. BENN, replying to Major Pole on July 21st, said that he had not yet received the views of the Government of India in regard to the resolution passed at the conference of representatives of the principal Governments and the medical faculties at Delhi, in June, requesting the Secretary of State to change the rules governing recruitment to the Indian Medical Service, so as to remove the provision that only persons holding degrees recognized by the General Medical Council in this country should be selected for the Indian Medical Service. Dr. FREMANTLE asked Mr. Benn to do everything he could to insist that in any such change in the rules there should be no degradation of the Service that had done so much and was expected to do so much by keeping its standard up to the European standard. Mr. BENN said that he could make no statement until he had received the views of the Government of India.

Tuberculosis.—On July 1st last, 22,575 patients were receiving residential treatment for tuberculosis under the approved schemes of local authorities in England and Wales. On the same date 3,232 patients had been awaiting admission to residential institutions for more than ten days. Mr. JOHNSTON informed Mr. Marcus, on July 22nd, that the numbers of new cases of all forms of tuberculosis notified in Scotland in 1928 and 1929 were 10,885 and 10,262 respectively. The number who received treatment in institutions in 1928 was 7,808. The corresponding figure for 1929 was not yet available. The Department of Health for Scotland had no evidence to indicate that any material number of cases were not receiving treatment because of lack of accommodation.

Tuberculosis in South Shields.—Replying to Mr. Ede, on July 17th, Mr. GREENWOOD said that a medical officer of his Department would visit South Shields shortly to investigate the prevalence of tuberculosis in the borough. It would not be an official inquiry in public, but all who had knowledge of the question would be consulted.

Dangerous Drugs.—Replying to Dr. Fremantle, on July 17th, Mr. CLYNES stated that it had not yet been possible to take steps to convene a preliminary conference of countries manufacturing narcotics, with a view to limiting their output. He would consult on the possibility of summoning a meeting for October. On the same date Mr. MARLEY asked whether the Home Secretary would consider the fining of doctors who left dangerous drugs in open cars. Mr. CLYNES replied that steps had already been taken in regard to that matter.

Drugs in Automatic Machines.—Mr. CLYNES told Dr. Morris-Jones, on July 17th, that he had seen a report of a case in which the legality of the sale of drugs of a poisonous character, procured from automatic machines outside chemists' establishments in the county of London, had been raised where the judge decided that such sale involved a breach of Section 3 of the Poisons and Pharmacy Act, 1908. The proceedings for the recovery of a penalty under that Section were of a civil character, and were instituted by the Registrar of the Pharmaceutical Society; he had no power to intervene. He understood the case in question was a test case arranged by the Pharmaceutical Society, and the judgement would no doubt be noted by those concerned.

Infectious Fevers.—In reply to Mr. Broad, on July 17th, Mr. GREENWOOD said that 3,388 deaths from measles were notified during 1929 in England and Wales, 29,084 from influenza, and 53 from chicken-pox. Of 120,232 cases of scarlet fever, 717 were fatal; of 62,774 cases of diphtheria, 3,446; of 10,967 of small-pox, 39; and of 69,178 of tuberculosis, 37,990.

Mental Deficiency.—Replying to Dr. Morris-Jones, on July 17th, Mr. GREENWOOD said he could not undertake at the present time to appoint a commission to make full inquiries into the causation of mental deficiency, its relationship to other abnormal conditions and social problems, and any measures, including segregation and sterilization, by which it might be prevented.

Undernourished Children.—Sir C. TREVELYAN stated, in reply to Mr. McShane on July 17th, that, apart from the practical difficulties involved, he doubted whether any useful results would be gained from a comparative medical examination of representative groups of scholars consisting partly of children of men unemployed for some time and partly of children of those belonging to the regularly employed artisan class. It was the duty of local education authorities to discover whether children were suffering from malnutrition. In areas where industrial depression was acute special steps were taken to keep a close watch on the health of the children and to provide supplementary nourishment in cases of need. Mr. MCSHANE said that such a comparison was found to be of much value in Glasgow some years ago.

Physical Training in Schools.—The House of Commons, in Committee of Supply, on July 14th, considered a vote for public education in Scotland. Mr. W. ADAMSON moved the vote. The Duchess of ATHOLL pointed out that the report on Scottish education stated that not enough physical training was given in the schools, and that it was only taken on two or three days a week, whereas the inspectors felt it should be every day. If physical training was not being given as often as the inspectors thought necessary, that pointed to a shortage of teachers. In the past Scotland had not devoted much attention to the training of the small child and to the nursery classes. Improvements in the health of the children between 1 and 5 years was of greater importance to the nation as a whole than an additional year of school life. Mr. COWAN said that the next great advance in Scottish education would be along the physical side, partly by practical work in the schools, but more by development of the medical services and the provision of playing fields. Sir F. THOMSON said maternity and child welfare schemes covered only about one-third of the children in Scotland. The provisions under the Act of 1919 for special schools for children between 5 and 9 years whose mental and physical condition necessitated attention had not been greatly used. Mr. JOHNSTON, replying for the Government, said they all wanted to see physical teaching or training. The vote was agreed to.

Poison Gas.—Replying to Mr. Freeman, on July 17th, Mr. SHAW said the results which had been obtained both during and since the war showed that experiments on animals at Porton gave definite evidence of the mode of action of poison gases on human beings. Indications were also obtained of the curative treatment which should be adopted. The knowledge gained had greatly alleviated human suffering during the war. On July 22nd Mr. SHAW, replying to Mr. Freeman, in reference to the experiments conducted at Porton with poison gases on animals, said that a comparison of the gross and microscopic appearance of the lungs of men killed by irritant gases in France with those of animals exposed to the same substances showed that the injuries were of similar nature and character. Further study of such animals gave evidence of the mode of action of the poisons and their effects on vital organs. It was thus possible, by correlating these experiments with clinical observations on gas patients, to formulate curative treatments. Descriptions and results of this research were published in the medical press shortly after the war.

Universities and Colleges.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on July 16th. A cordial vote of thanks was accorded to Sir Gregory Foster for the services he has rendered to the University during his tenure of the office of Vice-Chancellor.

Dr. Samson Wright, lecturer on physiology at King's College, was appointed to the University Chair of Physiology at the Middlesex Hospital Medical School.

Dr. Alexander Robertson was appointed to the University Readership in Biochemistry at the London School of Hygiene and Tropical Medicine.

The title of Professor was conferred upon Dr. J. G. Thomson (medical protozoology) and Dr. G. S. Wilson (bacteriology as applied to hygiene), in respect of the posts held by them at the London School of Hygiene and Tropical Medicine.

It was resolved to institute a University Chair of Radiology, tenable at the Cancer Hospital (Free), Fulham Road.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

A QUARTERLY meeting of the Royal College of Physicians of Edinburgh was held on July 15th, when the President, Sir Norman Walker, was in the chair.

Lieut.-Colonel W. F. Harvey, C.I.E. (Edinburgh), and Dr. Arthur Oliver Gray (London) were introduced and took their seats as Fellows of the College.

Dr. H. L. Wallace (Edinburgh), Dr. Wm. Brown, O.B.E. (Aberdeen), and Dr. H. E. Whittingham (Halton, Bucks) were elected Fellows of the College.

It was announced that Dr. D. K. Henderson (Glasgow) had been appointed Morison Lecturer for 1931.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

AT a meeting of the Royal College of Surgeons of Edinburgh held on July 22nd, when Dr. James Haig Ferguson, President, was in the chair, the following 22 successful candidates, out of 73 entered, having passed the requisite examinations this year, were admitted Fellows:

M. I. Ashmawi, P. C. E. Brunette, C. Charleson, A. C. Copley, A. Brython-Davies, J. Dick, C. A. Ferguson, J. P. Galloway, D. M. Gibson, T. J. Gibson, A. H. Holmes, J. B. Hutchison, C. M. Jennings, L. R. Lalwani, A. C. McEachern, H. F. Masson, J. W. Nankivell, H. K. Pavy, W. B. Roantree, E. T. S. Rudd, P. D. Thomson, A. L. Young.

The Ivison Macadam Memorial Prize, consisting of a bronze medal and a set of books, was, after a competitive examination in organic chemistry, awarded to Mr. E. T. Oon.

Medical News.

THE Alvarenga prize of the College of Physicians of Philadelphia has been awarded to Dr. H. A. Harris, assistant professor of anatomy, University College, and assistant to the Medical Unit, University College Hospital, for an essay entitled "Cod-liver oil and the vitamins in relation to bone growth and rickets."

THE Irish Medical Schools and Graduates' Association will hold its annual luncheon on Wednesday, August 27th, at 1 p.m., at the Marlborough Hotel, Winnipeg. The President of the British Medical Association, Professor W. Harvey Smith, will be the guest of the association. The speakers will include three distinguished members of the profession in Dublin—Sir William de Courcy Wheeler, Professor T. G. Moorhead, and Sir Robert Woods. The luncheon is open to any member of the medical profession, and guests, ladies or gentlemen, may be invited. Tickets will be $1 each, and can be obtained at the B.M.A. Registration Office. Seating accommodation is limited to one hundred and fifty. Reservations will be held if application is made by letter before August 25th to Dr. E. S. Moorhead, 314, Medical Arts Building, Winnipeg. Dr. Moorhead suggests that as there are many doctors of Irish descent who will want to hear their native language in its purest form, it is advisable to make reservations early.

As already announced in these columns, a new convalescent centre for 500 male patients has been established by the London County Council, which has purchased for this purpose Queen's Hospital, Sidcup, the name being changed to Queen Mary's Hospital by permission of the King and Queen. On July 21st Princess Mary, Countess of Harewood, visited the hospital and opened it formally. Dr. Barrie Lambert, chairman of the Central Public Health Committee, gave an account of the way in which the hospital had been obtained and modified for the new purposes to which it will be put. After various presentations to Princess Mary, she was conducted through the hospital wards by Dr. Clifford Ellingworth, the medical superintendent.

AT the July meeting of the Central Midwives Board for England and Wales the following resolution from the Liverpool and District Trained Midwives Association was received: "That the suggestion to transfer powers of approval and control of training schools and teachers from the Central Midwives Board to a Government department be strongly opposed."

A CIVIL List pension of £70 has been awarded to Miss Katherine Mary Lovell Gamgee, M.R.C.S., L.R.C.P., D.P.H., in recognition of the services rendered by her father, the late Professor Gamgee, to medicine and physiology, and of her work in connexion with public health.

THE fifth ordinary general meeting of the Ross Institute and Hospital for Tropical Diseases was held at the Institute, Putney Heath, on July 9th, when the chairman, Sir Charles McLeod, presented the annual report and accounts for 1929. In connexion with research, mention was made of the continued investigation of fungi and fungal diseases. The new malaria department had become a very popular centre for advising medical practitioners and laymen. A branch of the institute had been established in Assam, the expenses having been guaranteed by various planter companies. Work had begun in connexion with the supply of information and advice towards the improvement of health on the tea estates; scientific work would also be conducted there on the prevention of malaria. Courses of instruction for laymen had been continued at the Institute on Putney Heath, and the applications for the third course, to be held next September, were more than double those of the two courses held last year. A pamphlet on the prevention of malaria was being distributed, and a special donation had been received towards the expenditure thus incurred. Tribute was also paid to the long-continued research work of Dr. J. A. Shaw-Mackenzie in connexion with the cancer problem.

THE annual conference of the National Smoke Abatement Society will be held at Leicester on September 26th, 27th, and 28th. Dr. Margaret Fishenden will make a communication on fuel research and smoke abatement; a meteorologist will discuss smoke and the weather; and a report by the Sheffield Manufacturers' Smoke Abatement Research Committee will be considered.

THE thirteenth International Congress of Hydrology, Climatology, and Medical Geology will be held at Lisbon from October 15th to 23rd. During the congress visits will be paid to the more important towns and spas of Portugal, and an excursion will be made to the Azores and Madeira. Further information can be obtained from the Faculty of Medicine, Lisbon.

THE Italian League for Combating Cancer has offered a prize of 15,000 lire for the best unpublished work on the value of serological methods in the diagnosis of malignant tumours. Two typewritten copies of the work should be sent by competitors before June 30th, 1931, to the Lega Italiana per la lotta contra il cancro, Via Triboniand, Piazza Cavour, Caso del Mutdato, Rome.

THE returns of vital statistics dealing with non-native officials employed in the Crown Colonies in West Africa in 1929 contain evidence of an improved standard of health. The rate representing officials invalided out of the service fell from 11.7 per 1,000 in 1928 to 10.1 in 1929, which is the lowest figure recorded. A rise from 6.7 to 7.7 per 1,000 is reported in the death rate. No deaths occurred in Gambia during the year, but the rate in Sierra Leone rose from 3.7 in the previous year to 14.1. Slightly higher figures were also recorded in the Gold Coast and in Nigeria. Of the total of 33 deaths, 27 were attributed directly to diseases, but only a minority of these appear to have been of a tropical nature. Six deaths were caused by blackwater fever. The rate per 1,000 in respect of deaths caused by disease was 6.3 in 1929, compared with 11.6 in 1919.

WE have received the first two issues (January–February and March–April) of *Archivio Italiano di Anatomia e di Istologia Patologica*, which is published bi-monthly by the Royal Institute of Pathological Anatomy of the Ospedale Maggiore, Milan, under the editorship of A. Dionisi of Rome, A. Pepere of Milan, and F. Vanzetti of Turin. Each issue contains original articles and synthetic reviews, with summaries in German, French, and rather imperfect English, case reports, and abstracts.

A TABLE has been issued by the Ministry of Health, based on the returns made by the Poor Law authorities in England and Wales, comparing the average number of persons receiving poor relief in April, 1930, with the number recorded in April, 1914. In April, 1930, the average number (including both sexes) in receipt of outdoor relief mainly on account of unemployment was 130,100, while those to whom relief was granted for some other cause, such as sickness, numbered 606,500. This classification is not available for 1914, but the number receiving unemployment relief at that time is stated to have been almost negligible. In April, 1930, the total number in all classes was 736,600, compared with 373,400 in 1914—an increase of 363,200. The Ministry adds that the number recorded in April of this year was less by 121,500 than that recorded in the previous month. A decrease of 103,800 (or 44 per cent.) in the number of those receiving relief mainly on account of unemployment (including their dependants) is attributed largely to the operation of the Unemployment Insurance Act, which affected the distribution of unemployment benefit from the middle of March. The figures given above do not include 10,000 persons in receipt of medical relief only in their own homes. In 1914 the average amount of outdoor relief, estimated per person, was 2s. 6d., compared with 5s. 9d. in April, 1930 (about 3s. 8d., allowing for the increased cost of living). Persons receiving institutional relief—other than lunatics in asylums and casuals—numbered 254,900 on a day in April, 1914, compared with 211,900 on the corresponding day in April, 1930. This number is stated to be 12,000 less than the total number recorded in March, 1930.

THE Harrogate Medical Society has compiled a short account of the nature of spa treatment, incorporating a description of the Harrogate waters and baths and the accessory lines of therapy which are employed. The pamphlet, which is addressed to the medical profession only, may be obtained from the general manager, the Royal Baths, Harrogate.

WE have received the first issue of *Les Echos de la Médecine*, a monthly journal published by Malone of Paris in the form of a daily newspaper at the price of 50 centimes. It contains short articles on medical questions of the day, congress and society reports, and medical news.

THE alphabetical and local list of old students of St. Thomas's Hospital has been brought up to date and republished in pamphlet form, together with lists of past and present officers of the medical school, and of winners of scholarships and medals. Copies may be obtained from the medical secretary at the hospital.

LIEUT.-COLONEL E. M. COWELL, D.S.O., R.A.M.C., T.A., has been appointed a Deputy Lieutenant for the county of Surrey.

PROFESSOR FRITZ PREGL of Graz has founded a prize for the best work on microchemistry.

DR. KARL SUDHOFF, formerly professor of the history of medicine at Leipzig, has been elected a foreign member of the Hungarian Academy of Sciences at Budapest.

DR. LEMOINE, formerly professor of clinical medicine at Lille, has made a donation of 50,000 francs to the Lille medical faculty.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the *British Medical Journal* are ***MUSEUM 9861, 9862, 9863,*** and ***9864*** (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediaeera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone 24361 Edinburgh).

QUERIES AND ANSWERS.

KEEPING FIT IN HOT CLIMATES.

"C. H. B." writes from Malta: I should be grateful if someone would enlighten me on several points that arose during a discussion on keeping fit in hot climates, or alternatively recommend some small handbook covering the matter. First, the question of alcohol. My friend, who has spent many years in tropical countries, maintains that a good ration of gin daily is essential to health, and that the total abstainers are the first men to go sick. Secondly, even in climates such as this, he says it is very unwise, and inviting the mild intestinal disorders which are so common, to sleep without a good covering over the lower abdomen. Lastly, the question of exercise. He maintains that to keep fit one must indulge in some violent form of exercise every day, such as five sets of tennis, which causes a tremendous sweat. He will not accept a long swim as equal value in exercise because no beneficial results are obtained from the exercise unless it makes one sweat. These theories are postulated from twenty years' practical experience of hot countries, and I am not in a position, after an ordinary medical education, to accept or refute them. He and his kind have a strong bias in favour of alcohol, and it seems to me that they persuade themselves, and anyone else who will listen to them, that alcohol is a good thing, and then have to make themselves sweat. In short, in the Mediterranean climate, would it not be better to live a non-alcoholic life and swim, rather than an alcoholic life and have to play tennis and medicine ball?

BROMIDROSIS.

"D. B. M." writes: If "R. B. C." will try a strong foot-bath of potassium permanganate for the boy with bromidrosis the results will be satisfactory. The exact strength cannot be stated, as each case differs, but if the solution gives a mild "tanning" colour to the feet the smell disappears. The patient can be given the crystals, and use his own discretion as regards the strength of the solution.

CLEANSING OF THE CHALICE.

"R." writes: In my opinion "Medicus" (July 19th, p. 128) has raised a very important question. It would certainly be very difficult to prove a case of infection, but this fear does without doubt exist in the minds of devout and reflecting communicants. The difficulty would be solved if the clergy could be persuaded to administer the sacred rite by the method known as intinction. I cannot discover that intinction is contrary to the Rubric, but perhaps some ecclesiastic with medical training will enlighten us.

INCOME TAX.

Retirement of Partner; Cash Basis.

"G. P." explains that Y and Z have been in partnership for some years on a basis of half-shares, and tax has been accounted for on the cash basis. Y retired in June, 1929; Z anticipates some fall in the profits of the practice. Since Y's retirement a sum of, say, £2,000 has been collected in respect of previous partnership bookings. How should the matter be dealt with as between Y and Z?

*** We assume that it is intended to continue the cash bookings basis for future returns; in the long run probably little advantage would be gained to compensate for the inconvenience of changing over to the bookings basis. If—as may be the case—Y's retirement led to swollen receipts during the following twelve months, Z is affected adversely for the time being, but it is impossible to estimate such loss with sufficient accuracy to enable it to be allowed for in dividing the income tax liability. The plain fact is that up to his retirement (say at July 5th, 1929) Y was entitled to one-half the profits, and therefore the assessment for the year to April 5th, 1930, should be divided thus—Y one-fourth of one-half = one-eighth, and Z, seven-eighths. The cash receipts of the year 1929 will determine the assessable profit for 1930–31, and if Z enters into partnership with X during that year a similar division will bring him some converse relief.

Car Allowance.

"R. C." bought a W car in 1926, paying £612, less £235 allowance in respect of his previous car. In 1929 he bought an H car, price £518, less £123 received for the W car. What claim should he make for 1930–31?

*** Apparently depreciation allowance has not been claimed in the past, though it would apparently have been to "R. C.'s" advantage to do so. The obsolescence claim, the amount to be treated in the same way as an expense of the year 1929, would be £612–£123=£489, and the depreciation claim will be £518 at 20 per cent.=£103. "R. C." may, however, meet with the difficulty that, especially as depreciation has not been claimed, the "obsolescence" allowance is, in effect, the same as an allowance in respect of cost of replacement, and *that* allowance cannot be claimed for the same year as depreciation.

LETTERS, NOTES, ETC.

FOREIGN BODY IN CHILD'S VAGINA.

DR. A. L. CROCKFORD, *M.C.* (Axminster, Devon), writes: A fairly well-grown child, aged 7, was brought to me by her mother with the history of vaginal haemorrhages and a persistent yellowish discharge of some few weeks' duration. None of the haemorrhages was at all severe; they were only sufficient to stain her clothes to a marked extent: they all occurred in the early stages. The child was attending school and appeared to be of perfectly normal mentality. There was nothing to suggest any form of "assault" in either the history or on external examination. I therefore examined her under a general anaesthetic and found lodged in the vagina an ordinary hairpin, with the rounded end uppermost. One of the points was embedded in the anterior vaginal wall, which presumably was the site of the occasional haemorrhages. The hairpin was removed without much difficulty, and the discharge has since completely disappeared. It is surprising that with such an object in the vagina the child should have had no apparent pain or discomfort. The case illustrates the value of a thorough examination in elucidating an obscure symptom.

APYREXIAL LOBAR PNEUMONIA.

DR. NIAZ MOHAMMED (Kitgum, Uganda) writes: A Nobhi woman, aged about 45, came on April 16th to the out-patient department of Kitgum Hospital complaining only of slight cough, expectoration, and pain in the right chest. From her external appearance it appeared she was not seriously ill in any way, but after a few more gravely ill patients had received attention, I examined her and found definite signs of the consolidation stage of lobar pneumonia in the right lower and middle lobes. Her temperature, however, was only 98°. She was admitted to hospital and given the routine treatment for pneumonia; six days later she was discharged completely cured.

EARLY DENTITION.

DR. H. R. SPARROW (resident medical officer, Leeds Maternity Hospital) writes: I recently had a case of a premature baby, gestation period 37 weeks, and measuring 18½ in., who possessed two lower central incisor teeth at birth. The teeth were comparatively firm in the gum when the infant left hospital twelve days later.

A WARNING.

"POLICY" writes: May I warn practitioners in South-West London that there is a superintendent attached to a well-known insurance company who canvasses doctors and offers them a medical refereeship on condition that they take a substantial endowment policy with the company. He states that the appointed practitioner is the sole referee for the district, and that he can easily pay his premium out of the fees he will obtain. I know several men who have been appointed in this way, and they do not get more than about six cases a quarter. Before being persuaded, practitioners should make certain that they are the "sole" referee for the district.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 36, 38, 39, 42, 43, and 44 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *63*.

NATURALLY RICH IN VITAMIN "D"

A "RESURRECTION"

.....

.....GUILDFORD
30/6/30

"Baby Hook, came under my care shortly after birth suffering with marasmus following whooping cough. Broncho-pneumonia developed and was with great difficulty cleared up, leaving the child in a very low condition. Feeding proved a difficult problem, several things were tried without beneficial results. The results with Cow & Gate were truly wonderful, indeed it is a case of 'a resurrection.'"

(Signed).....M.B.Ch.B.

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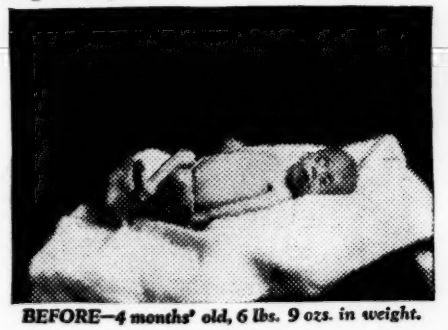
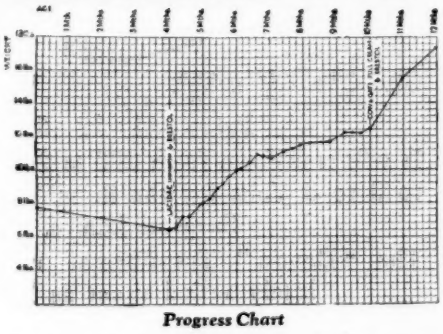
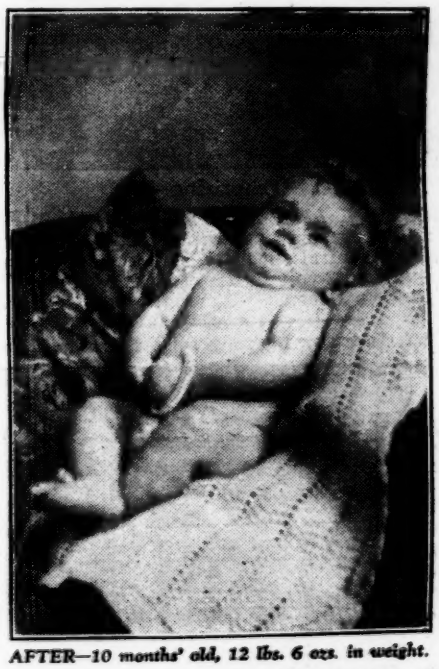


BEFORE—4 months' old, 6 lbs. 9 ozs. in weight.



Progress Chart



AFTER—10 months' old, 12 lbs. 6 ozs. in weight.

June 1930. Baby Hook has now won a prize in a Baby Competition!

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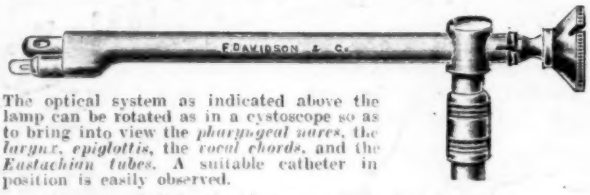

The optical system as indicated above the lamp can be rotated as in a cystoscope so as to bring into view the *pharyngeal aures*, the *larynx*, *epiglottis*, the *vocal chords*, and the *Eustachian tubes*. A suitable catheter in position is easily observed.

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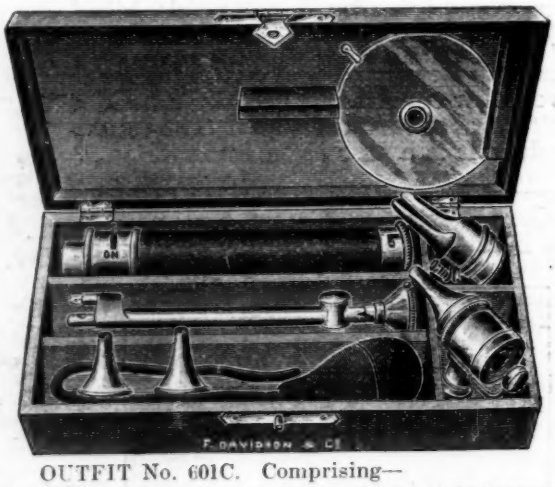

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Target frosted bulbs (please state voltage), each **3/6.**

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For the Alternating Current only.

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